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Intrusive Geotechnical Investigation

Proposed Melrose Park High School

37 Hope Street, Melrose Park

Report No 20468/4-AA Amended-2

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COVER PAGE

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30 January 2025

NSW Department of Education
School Infrastructure NSW (SINSW)
Level 30, Grosvenor Place, 225 George Street
SYDNEY NSW 2000

re: **Proposed Melrose Park High School**
37 Hope Street, Melrose Park
Intrusive Geotechnical Investigation Report

Please find herewith report on an Intrusive Geotechnical Investigation carried out for the proposed new High School at Melrose Park. This report supports the assessment of the proposed Activity under Part 5 of the Environmental Planning and Assessment Act 1979.

If you have any questions, please do not hesitate to contact the undersigned.

Yours faithfully
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EXECUTIVE SUMMARY

The NSW Department of Education is proposing to construct a new Melrose Park High School at 37 Hope Street, Melrose Park, to meet the growth in educational demand in Melrose Park. The proposed activities include construction and use of a new high school in two stages for approximately 1000 students. This Intrusive Geotechnical Investigation report has been prepared to assess the potential environmental impacts that could arise from the construction and use of the proposed new high school and to provide geotechnical recommendations on design of proposed activities. The assessments and recommendations presented in this IGI report are summarised below:

- Subsurface profile across the site comprises a sequence of fill and natural soils underlain by bedrock. The depth to bedrock is anticipated to vary from about 0.15m to 0.8m from existing ground surface. The depth to groundwater is more than 5.0m from existing ground surface.
- Fill and residual soils are clayey soils of low to medium plasticity and underlying bedrock is shale of varying strength.
- The subsurface soils across the site are likely to be susceptible to erosion. Therefore, earthworks for the proposed activity should be carried out in accordance with an appropriate Soil Management Plan to minimise erosion and impacts from erosion
- There are no known occurrences of saline and acid sulphate soils across the site.
- There are no known risks associated with slope instability and subterranean instability and hydrology.
- Subsurface conditions across the site may be represented by a Geotechnical Model constituting four Geotechnical Units namely, Unit 1 fill/natural soils and Units 2 to 4 bedrock of variable strength.
- At the completion of site preparation, foundation materials at building platforms for future school buildings and other structures are anticipated to vary from controlled fill to natural soils to bedrock. Therefore, ground bearing floor slabs of proposed buildings may be designed for sites belonging to Class A or M in accordance with Australian Standard AS2870.
- Appropriate footings for the proposed buildings are likely to comprise shallow (pad or strip) footings or deep footing founded or socketed into bedrock and designed in accordance with recommendations provided in this report.
- Potential geotechnical risk for the proposed activity may include risk of occurrence of erodible soils and variation in the depth to bedrock of varying strength.

Based on above discussion, it is our assessment that the potential geotechnical risks at the site for the proposed Activity are “Low” and can be addressed if soil management and design of proposed Activity are carried out in accordance with recommendation provided in this report. Furthermore, it is our assessment that the proposed Activity is not likely to significantly affect the environment in relation to geotechnical considerations. Therefore, it is our assessment that the site is suitable for construction of proposed new high school provided earthworks and designs of ground floor slabs and footings of proposed school structures are carried out in accordance with recommendations provided in this report.

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Attachment A: Drawing No 20468/4-AA1 Plan Showing Borehole Locations and Borehole Logs
Attachment B: Laboratory Test Results

ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Description
ASS	Acid Sulphate Soil
COLA	Covered Outdoor Learning Area
CSM	Conceptual Site Model
DoE	Department of Education
EC	Electrical Conductivity
Ece	Equivalent Electrical Conductivity
ESP	Exchangeable Sodium Percentage
GLS	General Learning Spaces
IGI	Intrusive Geotechnical Investigation
PGDR	Preliminary Geotechnical Desktop Report
PS	Public School
REF	Reference Environmental Factors
SINSW	School Infrastructures NSW
SPT	Standard Penetration Test
SWMS	Safe Work Method Statement

1.0 INTRODUCTION AND DECLARATION

This Intrusive Geotechnical Investigation (IGI) report has been prepared by Geotechnique Pty Ltd on behalf of the Department of Education (DoE) to assess the potential environmental impacts that could arise from the construction and use of the new Melrose Park High School project (the **Activity**) at 37 Hope Street, Melrose Park (the **Site**). This report supports the assessment of the proposed Activity under Part 5 of the Environmental Planning and Assessment Act 1979. The Activity is proposed by the DoE to meet the growth in educational demand in the Melrose Park precinct. Figure 1 below shows the location of the site.

Figure 1 - Location of Proposed Melrose Park High School

This report has been prepared to provide assessment of subsurface conditions across the site in order to provide geotechnical recommendations on site preparation and the design of the proposed activities, including school structures. The IGI was completed in accordance with Australian Standard AS1726 (Reference 1).

2.0 SUMMARY OF ACTIVITIES

The proposed activity is for the construction and use of the new Melrose Park High School. The proposed activity is being assessed under Part 5 of the Environmental Planning and Assessment Act 1979. It is (or will soon be, subject to legislative amendment) permitted without consent under State Environmental Planning Policy (Transport and Infrastructure) 2021.

The proposed activity involves the construction and use of a new high school in two stages for approximately 1,000 students.

Stage 1 of the proposed activity includes the following:

- Site preparation works.
- Construction of Block A – a six-storey (with additional roof/plant level) school building in the south-westernportion of the site containing staff rooms and General Learning Spaces (GLS).
- Construction of Block B – a one storey (double height) hall, gymnasium, canteen and covered outdoor learning area (COLA) building in the south-eastern portion of the site.
- Construction of Block C – a single storey plant and storage building at the north-eastern portion of the site.
- Associated landscaping.
- Construction of on-site car parking.
- Provision and augmentation of services infrastructure.
- Associated infrastructure works to support the school, including (but not limited to):
    - Provision of kiss and drop facilities along Wharf Road and widening of the Wharf Road footpath.
    - Raised pedestrian crossings.

Stage 2 of the proposed activity includes the following:

- Construction of Block D - a five-storey (with additional roof/plant level) school building in the north-western portion of the site containing staff rooms and GLS:
- Additional open play spaces within the terrace areas of Building D.
- Minor layout amendments to Block A.

Figure 2 in the following page shows footprints of proposed buildings, car park, open spaces etc.

3.0 SITE DESCRIPTION

The site is located at 37 Hope Street, Melrose Park, within the Parramatta LGA. The school covers an approximate area of 9,500m2 and is generally rectangular in shape. The site is currently cleared and vacant. The site is located approximately 8km east of the Parramatta CBD.

4.0 REF REPORTING REQUIREMENTS

This IGI report is prepared specifically to address the following geotechnical engineering related Reference Environmental Factors (REF) reporting requirements.

Requirement	Y	N	N/A	Comments
Soil and Water				
If the site is mapped as, or has otherwise been identified, as having salinity potential, does the geotechnical report consider impacts from salinity and set out measures to mitigate impacts (i.e. Salinity Management Plan) so that they would not be significant?	☐	☐	☒	Section 5.1.2 and 5.3.5
If the site is mapped as, or has otherwise been identified as having acid sulfate soils (ASS) potential, does the geotechnical report consider impacts from ASS and set out measures to mitigate impacts (i.e. ASS Management Plan) so that they would not be significant?	☐	☐	☒	Section 5.1.3
If the site is mapped as being in an area of groundwater vulnerability, does the REF include an Integrated Water Management Plan that assess the potential of the activity to impact groundwater and does it conclude that the activity would not be likely to have significant environmental impacts with or without mitigation measures?	☐	☐	☒	Section 5.1.4 and 5.3.2
If the site is mapped as being in an area of landslide risk, does the REF assess the potential of the activity and does it conclude that the activity would not be likely to have significant environmental impacts with or without mitigation measures?	☐	☐	☒	Section 5.3.16
Does the REF summarise the proposed controls and incorporate any mitigation measures identified in the above documents?	☒	☐	☐	Section 7.0

5.0 CONSULTANT REPORT CONTENT

5.1 Background Information

5.1.1 Regional Geology and Soil Landscape

Based on the Geological Map of Sydney (scale 1:100,000), bedrock at the site is anticipated to be Hawkesbury Sandstone comprising medium to very coarse grained quartz sandstone, minor laminated mudstone and siltstone lenses (Reference 2).

Based on the Soil Landscape Map of Sydney (scale 1:100,000), the landscape at the site is anticipated to belongs to Lucas Height Group, which is characterised by gently undulating crests and ridges on plateau surfaces of Mittagong Formation (alternating bands of shale and fine grained sandstone), with local relief to 30m and ground surface slopes of less than 10%. Rock outcrop is absent. The subsurface soil is likely to be moderately deep (0.5m to 1.5m) and stony (Reference 3).

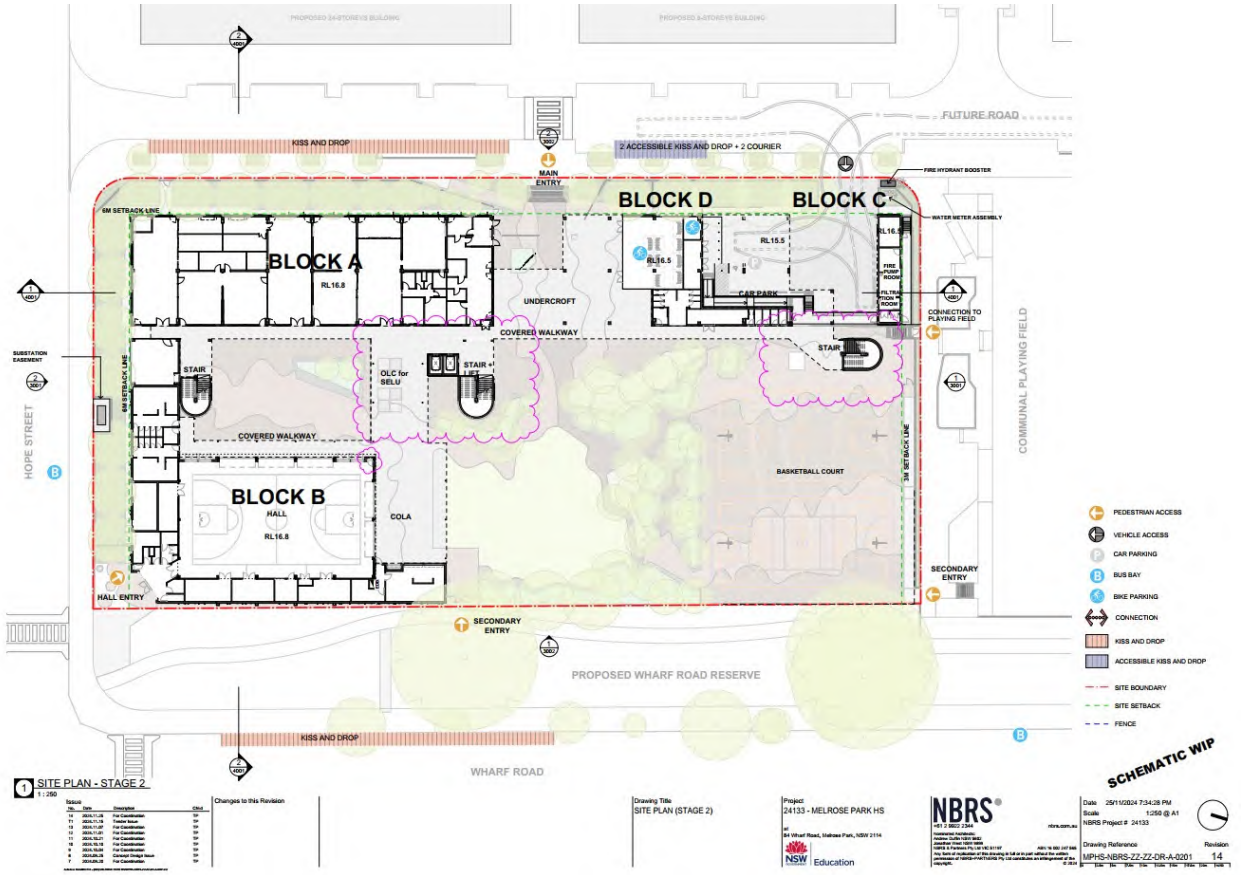

Figure 2 - Footprints of Proposed Structures in Proposed Melrose Park High School

5.1.2 Soil Salinity

Reference to Map showing Salinity Potential in Western Sydney (Scale Approximate 1:143,000) prepared by Department of Infrastructures, Planning and Natural Resources (2002) indicates low salinity potential across most portions of the site and moderately salinity potential in the north western corner of the site (Reference 4).

5.1.3 Acid Sulphate Soils

Department of Land and Water Conservation has produced Acid Sulphate Soil Risk Maps for areas with known or potential occurrence of acid sulphate soils in NSW. Reference to Acid Sulphate Soil Risk Map of Prospect/Parramatta shows no known or probabilities of occurrences of acid sulphate soils across the site for proposed Melrose Park New High School (Reference 5).

5.1.4 Groundwater

A search of the website of Department of Primary Industries Office of Water for registered groundwater bore data shows no registered bore within radius of 500.0m of the site (Reference 6). There is no water body, such as a creek, river, or wetland close to and transecting the site.

5.1.5 JK Geotechnics Report

JK Geotechnics prepared a geotechnical investigation report (Reference 7) for a proposed residential development at the corner of Hope Street and Wharf Road at Melrose Park. This investigation involved

drilling of sixteen boreholes designated as BH1 to BH16 and indicated below in Figure 3. Boreholes designated as BH3 to BH8 are located within the site for the proposed high school.

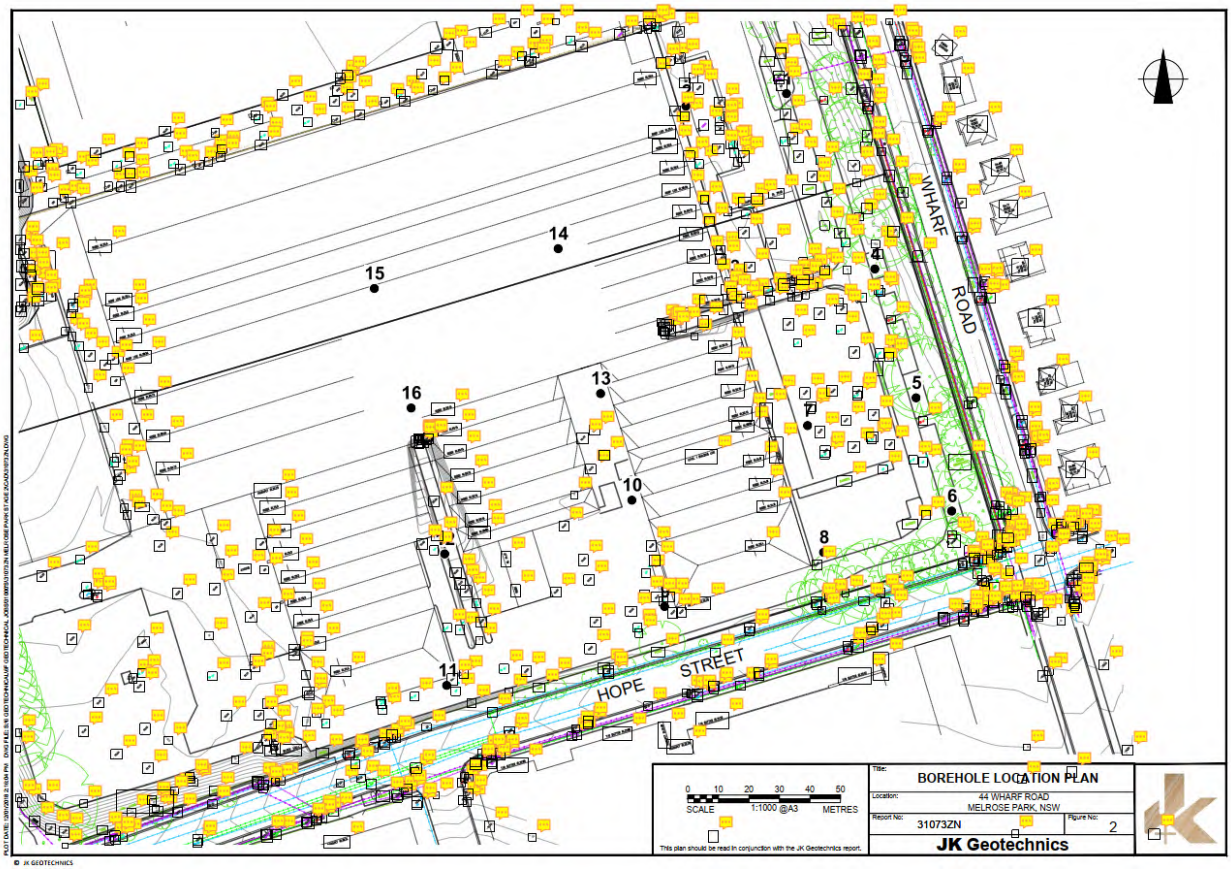

Figure 3 – Locations of Boreholes Drilled for Preparation of Reference 7

Boreholes designated as BH3 to BH8 drilled to depth of about 20.0m from existing ground surface indicate that the subsurface profile across the site is likely to comprise a sequence of pavement/fill and residual soils underlain by bedrocks. Reference 7, among others, indicates the following.

- The site belong to “Mild Exposure Classification” in accordance to Australian Standard AS2159 for concrete pile design (Reference 8).
- The indicative California Bearing Ratio (CBR) value of residual soils is about 6.0%
- Bedrocks up to borehole termination depths include shale generally underlain by sandstone. Bedrocks classified for foundation design in accordance with Pells et al (Reference 9) indicate the following.
    - The depth to Class V shale varies from about 0.5m to 2.0m from existing ground surface and elevation at the top surface of Class V shale varies from about RL14.5m to 16.0m AHD.
    - The depth to Class IV shale and sandstone varies from about 3.5m to 5.5m and elevation at the top surface of Class IV shale and sandstone varies from about RL11.50 to 13.5m AHD.

- The depth to Class II shale varies from about 4.5m to 6.0m and elevation at the top surface of Class V shale varies from about RL11.0m to 12.5m AHD.
- The depth to Class II sandstone varies from about 10.5m to 13.0m and elevation at the top surface of Class V shale varies from about RL3.5m to 6.5m AHD.

5.2 Preliminary Geotechnical Desktop Study

Geotechnique Pty Ltd completed a Preliminary Geotechnical Desktop Study (PGDS) for the proposed high school and submitted Report No 20468/21-AA dated 27 February 2024 (Reference 10). This report in general indicates the following:

- Subsurface profile across the site is likely to comprise a sequence of topsoil/fill and natural soils underlain by bedrock. Natural soils are loose to medium dense sandy soils and stiff to very stiff clayey soils of low to medium plasticity. The depth to bedrock is anticipated to be 2.0m or more from natural ground surface and the depth to groundwater is likely to be in excess of 1.5m from natural ground surface. But the depth to bedrock and groundwater could be significantly different from those mentioned above if the site has been subjected to cut and fill operation which is deemed likely.
- The subsurface soils across the site are also likely to be susceptible to erosion. Therefore, earthworks may have to be carried out in accordance with an appropriate Soil Management Plan (Reference 11).
- There are no known occurrence of saline soils and acid sulphate soil materials within the soil profiles at the site. Therefore, earthworks may be carried out without approved Saline Soil Management Plan and Acid Sulphate Soil Management Plan.
- There are no known risks associated with slope instability and subterranean instability and hydrology.
- Subsurface conditions across the site may be represented by a Geotechnical Model constituting two Geotechnical Units namely, Unit 1 natural soils and Unit 2 bedrock. Controlled fill, which may be placed during proposed development works, may be considered to belong to Unit 1. It is desirable that uncontrolled fill if encountered is replaced with controlled fill.
- At the completion of earthworks, foundation materials at building platforms for future school buildings are anticipated to vary from controlled fill to natural soils and appropriate Site Classifications for building sites across the school are likely to belong to Class M or H1 in accordance with Australian Standard AS2870 (Reference 12).
- Appropriate footings for the proposed buildings are likely to comprise shallow (pad or strip) footings founded on controlled fill, natural soils or deep footings socketed into bedrock.
- Potential geotechnical risk for the proposed development may include risk of occurrence of uncontrolled fill which are unsuitable foundation materials and excessive soil erosion.

From geotechnical engineering considerations, the site is assessed to be suitable for construction of the proposed Melrose Park High School provided earthworks/site preparation and designs of floor slabs and footings of future school buildings and other structures are carried out in accordance with recommendations provided in IGI report and proposed structures are located outside the zone of influence of existing structures and vice versa.

5.3 Intrusive Geotechnical Investigation

5.3.1 Field Works

Field works for the intrusive geotechnical investigation were carried out on 2 and 3 December 2024 and consisted of the following.

- Review the PGDR and plan showing footprints of proposed buildings and basketball court.
- Review services plans obtained from "DBYD" to assess locations of existing underground services across the site.
- Carry out a walk over survey to assess existing site conditions and nominate five borehole locations, three boreholes within the footprints of Blocks A and C and one borehole each within the footprints of Block B and basketball court.
- Scan the proposed borehole locations for underground services to ensure boreholes are located away from existing services.
- Drill five (5) boreholes using a truck mounted drilling rig fully equipped for geotechnical investigation. Boreholes within the footprints of Blocks A and C were initially drilled to TC-bit refusal in bedrock at depths of about 0.8m to 2.95m and then continued to depths of about 5.0m to 5.5m using rock coring method. Two remaining boreholes were terminated at TC-bit refusal in bedrock at depths of about 0.8m to 1.6m. Locations of boreholes are indicated on Drawing No 20468/4-AA1 presented in Appendix A. Borehole logs and core photographs are also presented in Appendix A.
- Carry out Standard Penetration Tests (SPT) in boreholes at regular depth intervals to assess the strength of sub-surface soils. SPT results are included in appropriate borehole logs.
- Recover representative soil samples and rock cores from boreholes for visual assessments and laboratory tests.
- Measure depths to groundwater levels in boreholes, if encountered.
- Backfill the boreholes with recovered materials after logging and sampling.
- Locate borehole locations using our inhouse GPS.

Field works were supervised by a Field Engineer from this company and carried out in accordance with a Safe Work Method Statement (SWMS) to ensure works are carried out safely and with minimum impact to the environment.

5.3.2 Subsurface Profile

Sub-surface profiles encountered in boreholes are detailed in borehole logs presented in Appendix A and summarised below in Table 1.

Table 1 - Sub-surface Profiles encountered in Boreholes

Borehole No	Easting (m)	Northing (m)	Ground Surface RL (m AHD)	Termination Depth (m)	Depth for Fill (m)	Depth for Residual Soil (m)	Depth to Bedrock (m)
BH1	6256844.12	321539.77	16.26	5.31	0.0-0.15	-	0.15
BH2	6256884.24	321527.47	16.00	5.50	0.0-0.30	-	0.30
BH3	6256927.88	321509.00	15.48	5.00	-	0.0-0.3	0.30
BH4	6256855.53	321571.34	16.04	1.63	0.0-0.15	-	0.15
BH5	6256940.34	321535.00	15.21	0.85	-	0.0-0.8	0.80

Table 1 indicates that the subsurface profiles across the site generally comprise a sequence of fill or residual soils underlain by bedrock. The depth to bedrock is anticipated to vary from about 0.15m to 0.8m from existing ground surface. The subsurface materials may in general be described as follows:

Fill Gravelly CLAY, low plasticity, grey, moist, generally well compacted

Residual Soil Silty CLAY, medium to high plasticity, brown, mottled grey, moisture content generally lower than plastic limit, firm to stiff

Bedrock SHALE, grey, extremely to slightly weathered, low to high strength, with ironstone bands

Groundwater level was not encountered up to TC-bit refusal depths of about 0.85m to 2.95m from existing ground surface. Use of water for rock coring precluded measurement of groundwater level at completion of coring. But based on observation during drilling, we anticipate that the depth to regional groundwater level across the site to be more than 5.0m during normal climatic conditions. However, it should be noted that the groundwater levels might vary due to rainfall and other factors not evident during field work.

5.3.3 Laboratory Test

Representative soil samples recovered from boreholes were tested in NATA accredited laboratories to determine the following.

- Physical properties including Atterberg Limits, shrink swell index and Emerson Class.
- Chemical properties including Electrical Conductivity, pH, sulphate and exchangeable sodium percentage.

Rock cores were photographed and tested for determination of point load strength index.

Detailed results of laboratory on soil samples are presented in Appendix B and summarised in the following Tables 2 and 3.

Table 2 - Results of Physical Properties Tests

Borehole No	Sample Depth (m)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Shrinkage Limit (%)	Emerson Class	Shrink Swell Index (%/pF)
BH1	0.8-1.0	34.0	19.0	15.0	8.0	2	-
BH2	0.3-0.5	34.0	14.0	20.0	10.0	2	-
BH4	1.0-1.4	32.0	18.0	14.0	7.0	6	-
BH5	0.0-0.15	-	-	-	-	-	2.9

Table 3- Results of Chemical Properties Tests

Borehole No	Sample Depth (m)	EC (µS/cm)	pH	Sulphate (ppm)	Exchangeable Sodium Percentage (%)
BH1	1.1-1.30	43	5.5	59	34.4
BH2	1.5-1.95	38	5.6	49	29.8
BH3	0.7-0.74	28	5.2	34	18.5
BH4	1.5-1.63	56	5.0	59	28.6
BH5	0.5-0.85	46	4.6	34	8.8

Rock cores obtained from obtained from boreholes were photographed and tested at regular depth intervals for determination of Point Load Strength Index (Is_{50}). The point load strength indices for the rock cores and the assessed rock strengths, in accordance with Australian Standard AS1726 (Reference 1), are summarised in the following Table 4.

Table 4 - Results of Point Load Strength Index Tests

Borehole No	Depth (m)	Diametral $I_{s(50)}$ MPa	Axial $I_{s(50)}$ (MPa)	Assessed Diametral Strength	Assessed Axial Strength
BH1	2.90	0.03	0.54	Very Low	Medium
BH1	3.65	0.23	0.62	Low	Medium
BH1	4.18	0.56	0.75	Medium	Medium
BH1	5.10	1.08	2.58	High	High
BH2	3.10	0.37	0.52	Medium	Medium
BH2	4.28	0.20	3.02	Low	Very High
BH2	5.48	0.09	3.58	Very Low	Very High
BH3	2.05	0.09	0.21	Very Low	Low
BH3	3.68	0.04	0.10	Very Low	Low
BH3	4.40	0.16	0.22	Low	Low

It should be noted that Point Load Strength tests could only be carried out on intact (stronger) portions of rock cores. Therefore, strength assessments presented in Table 4 indicates the upper limits of rock strengths. Based on assessed rock strengths and rock discontinuities shown in the borehole logs, bedrock from the proposed development site is classified for foundation design in accordance with Pells et al (Reference 9) in the following Table 5.

Table 5 - Rock Classification for Foundation Design

Borehole No	Ground Surface RL (m AHD)	Depth Range for Class V Rock (m)	Depth Range for Class IV Rock (m)	Depth Range for Class III/II Rock (m)
BH1	16.26	0.15-2.7	2.7-3.3	≥3.3
BH2	16.00	0.3-3.0	3.0-4.0	≥4.0
BH3	15.48	0.8-1.0	1.0->5.0	-
BH4	16.04	≥0.15	-	-
BH5	15.21	≥0.80	-	-

5.3.4 Recommended Geotechnical Model for the Site

Boreholes indicate that the subsurface profile across the site comprises a sequence of fill or residual soils underlain by bedrock. The thickness of fill and residual soil combined is anticipated to vary from about 0.15m to 1.0m and the depth to bedrock across the site is anticipated to vary from 0.15m to 0.8m from existing ground surface.

Based on borehole information detailed in this report, a Geotechnical Model constituting four Geotechnical Units and detailed below in Table 6 is suggested for the site of the proposed new high school. Each Geotechnical Unit represents a specific nature of soil or bedrock encountered across the site.

Recommended indicative strength parameters, in terms of cohesion and internal friction angle, as well as modulus for each Geotechnical Unit are presented below in Table 7.

Table 6 - Recommended Geotechnical Model

Geotechnical Unit	Material Description	Indicative Depth to Top of Unit (m)	Indicative d RL at the Top of Unit (m AHD)
Unit 1	Fill/Residual Soil	0.0	15.2-16.2
Unit 2	Bedrock – Class V	0.1-1.0	14.4-16.1
Unit 3	Bedrock – Class IV	1.0-3.0	13.0-14.5
Unit 4	Bedrock – Class III/II	3.5->5.0	≤13.0

Table 7 - Effective Strength Parameters and Modulus

Geotechnical Units	Unit Weight (kN/m^3)	Undrained Cohesion (kPa)	Effective Cohesion (kPa)	Friction Angle (deg)	Young's Modulus (MPa)	Poisson's Ratio
Unit 1	18.5	100.0	3.0	26.0	15.0	0.30
Unit 2	20.0	300.0	15.0	29.0	50.0	0.25
Unit 3	21.0	450.0	20.0	30.0	100.0	0.25
Unit 4	23.0	600.0	50.0	33.0	250.0	0.20

5.3.5 Soil Salinity

Soil salinity is generally assessed by measuring Electrical Conductivity (EC) of a soil sample made up of 1:5 soil water suspension. Thus, determined EC is multiplied by a multiplying factor varying from 6 to 23, based on the texture of the soil sample, to obtain Corrected Electrical Conductivity designated as ECe (Reference 13). Alternatively, ECe may be directly measured in soil saturation extracts. Soils are classified as saline if ECe of the saturated extracts exceed 4.0dS/m. The criteria for assessment of soil salinity classes are shown in the following Table 8 (Reference 13).

Table 8 - Criteria for Soil Salinity Classification

Classification	EC_e (dS/m)	Comments
Non-saline	<2	Salinity effects mostly negligible
Slightly saline	2 – 4	Yields of very sensitive crops may be affected
Moderately saline	4 – 8	Yields of many crops affected
Very saline	8 – 16	Only tolerant crops yield satisfactorily
Highly saline	>16	Only a few tolerant crops yield satisfactorily

Electrical conductivity (EC) values for 5 representative soil samples are summarised in Table 3. For gravelly clay encountered across the site an appropriate multiplying factor is assumed to vary from 10 to 12. Even if a factor of 12 is used, estimates of ECe values for representative soil samples are estimated to be less than 2.0dS/m. Therefore, soils across the site, including fill and residual soils, are assessed to be non-saline soils.

5.3.6 Exposure Classification

Australian Standard AS2870 (Reference 12) provides guidelines to assess Exposure Classification for saline and acid/sulphate soils. Table 9 below provides salinity and Exposure Classifications based on EC_e, and Table 10 provides Exposure Classification based on acidic and sulphate soils (Reference 12).

Table 9 – Exposure Classifications for Saline Soils

Electrical Conductivity, EC_e (dS/m)	Exposure Classification	Salinity Classification
<2	A1	Non-saline
2 – 4	A1	Slightly saline
4 – 8	A2	Moderately saline
8 – 16	B1	Very saline
>16	B2	Highly saline

Table 10 – Exposure Classifications for Sulphate Soils

Sulphate expressed as SO_3		pH	Exposure Classification*	
In Soil (ppm)	In Groundwater (ppm)		Soil Condition A	Soil Condition B
<5000	<1000	>5.5	A2	A1
5000-10000	1000-3000	4.5-5.5	B1	A2
10000-20000	3000-10000	4.0-4.5	B2	B1
>20000	>10000	<4.0	C2	B2

*Soil Condition A = high permeability soils (e.g. sands and gravels) which are below groundwater
*Soil Condition B = low permeability soils (e.g. silts and clays) and all soils above groundwater

Soils across the site are predominantly clayey and therefore “Soil Condition B” is assessed to appropriate for the site. Therefore, based on laboratory test results presented in Tables 3 and guidelines on Exposure Classifications presented in Tables 9 and 10, the Exposure Classifications for site is Class A1 or A2. pH values are dominant. Therefore, we recommend that the proposed high school construction use construction materials (such as concrete, bricks etc) and construction methods appropriate for Exposure Class A2.

5.3.7 Aggressivity Classification

Australian Standard AS2159 (Reference 8) provides Aggressivity Classifications of soil and groundwater applicable to iron/steel and concrete piles. The Aggressivity Classifications applicable to iron/steel piles is provided below in Table 11 and that applicable to concrete piles is provided in Table 12.

Table 11– Aggressivity Classification for Steel

Chloride		pH	Resistivity (ohm cm)	Soil Condition A*	Soil Condition B#
In Soil (ppm)	In Water (ppm)				
<5000	<1000	>5.0	>5000	Non-aggressive	Non-aggressive
5000-20000	1000-10000	4.0-5.0	2000-5000	Mild	Non-aggressive
20000-50000	10000-20000	3.0-4.0	1000-2000	Moderate	Mild
>50000	>20000	<3.0	<1000	Severe	Moderate

Table 12 – Aggressivity Classification for Concrete

Sulphate expressed as SO_4		pH	Chloride in Water (ppm)	Soil Condition A	Soil Condition B
In Soil (ppm)	In Groundwater (ppm)				
<5000	<1000	>5.5	<6000	Mild	Non-aggressive
5000-10000	1000-3000	4.5-5.5	6000-12000	Moderate	Mild
10000-20000	3000-1000	4.0-4.5	12000-30000	Severe	Moderate
>20000	>10000	<4.0	>30000	Very Severe	Severe

As discussed above, “Soil Condition B” is appropriate for the site. Therefore, based on laboratory test results presented in Tables 3 and guidelines on Aggressivity Classifications presented in Tables 11 and 102 the soils across the site are assessed to be Non-aggressivity to Mildly Aggressive to concrete piles but Non-aggressive to steel piles (Reference 8). Therefore, we recommend that the piles supporting proposed high school structures are designed to suit assessed aggressivity classifications.

5.3.8 Soil Reactivity

Reactivity of soils across the site is assessed by determination of Atterberg limits and shrink swell index for representative samples and results are presented in Table 2. Representative soils show liquid limit of 32% to 34% and plasticity index of 14% to 30%. Likewise, shrink swell index of a representative soil sample is 2.9%/pF. Based on results of Atterberg limits and shrink swell index, it is our assessment that soil across the site of low to medium plasticity and therefore susceptible to some shrink and swell movements. This fact should be considered in the design and construction of proposed school building and other structures.

5.3.9 Soil Erodibility

Erosion is the detachment and movement of soil materials. Soil erodibility (or dispersivity) is generally assessed by assessing physical properties tests such as Emerson Class and Pinhole Class and chemical properties tests such as Exchangeable Sodium Percentage (ESP) and Sodium Absorption Ratio (SAR).

For the current investigation, Emerson Classes and ESP values for representative soil samples were determined. Test results can be assessed as follows:

- Emerson Class tests grade soils into eight classes, Class 1 being highly erodible (highly dispersive) and Class 8 being non-erodible (non-dispersive). Soils with Emerson Classes 1 to 4 are to be treated with caution if used in construction purposes (Reference 14). Table 2 indicates two soil samples out of three belong to Emerson Class 2 whereas one sample belongs to Emerson Class 6.
- Soils with ESP values of 10% or more are considered sodic/dispersive and susceptible to excessive erosion whereas soils with ESP of more than 5% are potentially dispersive (Reference 13). Table 3 indicates ESP values of five samples vary from 8.8% to 34.4% but only one sample shows ESP values of less than 18.0%.

Although one sample shows Emerson Class of 6 indicting possibility of localised non-dispersive soils, it is our assessment that the soils across the site are predominantly erodible and susceptible to excessive erosion. Therefore, we recommend that the excavation and disturbance of soils during proposed activity are carried out in accordance with a Soil Management Plan (SMP) to minimise impacts of soil erosion. SMP can be developed in accordance with Department of Housing Guidelines (Reference 11).

5.3.10 Excavation Conditions

Site preparation for construction of proposed new high school is anticipated to involve only minor excavation and proposed excavations are anticipated to be up to about 1.5m from existing ground surface. Therefore, the materials to be excavated during site preparation are anticipated to comprise fill, residual soils and Class V and IV shale (Units 1 to 3).

It is our assessment that the excavations for construction of proposed new high school can be achieved using conventional earthmoving equipment such as excavators and dozers.

Based on site observation during field works, we do not anticipate significant groundwater inflow during excavations to depth of about 1.5m. Minor groundwater inflow, if any, could be managed by a conventional sump and pump method. However, trafficability problems could arise locally during wet weather or if water is allowed to pond at the site.

5.3.11 Fill Placement

Site preparation for construction of the proposed high school construction may involve placement of some fill. Fill placement should be carried out in a controlled manner and we recommend the following procedures for placement of controlled fill.

- Strip any existing topsoil and stockpile separately for possible future uses or dispose off the site. Topsoil may be used in landscaping.
- Undertake proof rolling of exposed fill and/or residual soil using an 8 to 10 tonnes roller to detect potentially weak spots (ground heave). Excavate areas of localised heaving to a depth of about 300mm and replace with granular fill, compacted as described below.
- Undertake proof rolling of soft spots backfilled with granular fill, as described above. If the backfilled area shows movement during further proof rolling, this office should be contacted for further recommendations. But if removal of topsoil and heaving ground exposes bedrock, no additional proof rolling will be required.
- Place suitable fill materials on proof rolled surface of fill/residual or bedrock. Fill should be placed in horizontal layers of 200mm to 250mm maximum loose thickness and compacted to a Minimum Dry Density Ratio (MDDR) of 98% Standard, at moisture content within 2% of Optimum Moisture Content (OMC). However, the upper 500mm of controlled fill forming subgrade for access roads and car parks should be compacted to a MDDR of 100% Standard, at moisture content within 2% of OMC. Controlled fill should preferably comprise non-reactive fill (e.g. crushed sandstone), with a maximum particle size not exceeding 75mm, or low plasticity clay. The fill materials, residual soils and bedrock obtained from excavations within the site may also be selectively used in controlled fill, after crushing to sizes finer than 75mm, moisture conditioning, and removal of unsuitable materials.
- Fill placement should be supervised to ensure that material quality, layer thickness, testing frequency and compaction criteria conform to the design specifications. We recommend "Level 1" supervision and testing, in accordance with AS3798 (Reference 15).

Where no fill placement is required, existing fill, if any, should be proof rolled as discussed above to ensure no heaving occurs so that existing fill is suitable foundation materials. Heaving fill should be removed are replaced with controlled fill placed in accordance with above recommendations.

5.3.12 Batter Slopes and Retaining Structures

As discussed, site preparation for construction of the proposed high school may involve some cut and fill operations. Cut and fill slopes are likely to be shallow and generally of temporary in nature. Batter slopes should be battered for stability or retained by engineered retaining structures. We do not anticipate cut and fill slopes will require retention.

For battered slopes, we recommend the following:

- For short-term stability = 1 vertical to 1 horizontal
- For long-term stability = 1 vertical to 2.5 horizontal

But if cut and fill slopes steeper than those recommended above are required for whatever reason, these slopes should be retained by engineered retaining structures. Appropriate retaining structures for the proposed works are anticipated to comprise cantilever walls and gravity walls. The pressure distribution on such walls is assumed to be triangular in shape and estimated as follows:

$$p_h = \gamma k H$$

Where,

p_h = Horizontal pressure (kN/m^2)
γ = Total unit weights of retained materials (kN/m^3)
k = Coefficient of earth pressure (k_a or k_o)
H = Retained height (m)

For design of flexible retaining structures where some lateral movement is acceptable, an active earth pressure coefficient (ka) of 0.35 is recommended. However, if it is critical to limit the horizontal deformation, use of an earth pressure coefficient at rest (ko) of 0.55 is recommended. Recommended coefficients are based on the assumptions that the ground level behind the retaining structure is horizontal, and the retained material is effectively drained. Additional earth pressures resulting from surcharge load (buildings, infrastructures, etc) on retained materials and groundwater pressure, if any, should also be allowed for in design of retaining structures.

As bedrock are anticipated at shallow depths, retaining walls are anticipated to be founded on or socketed into bedrock. Allowing bearing pressures for design of footings are presented below in this report. The passive pressure coefficient for design of retaining wall socketed into bedrock are as follows.

- K_p for Bedrock Units 2 and 3 = 2.8
- K_p Bedrock Unit 4 = 3.0

The design of any retaining structure should also be checked for bearing capacity, overturning, sliding and overall stability of the slope.

5.3.13 Site Classification

Australian Standard AS2870 (Reference 12) indicates that a building site can be classified based on thickness of clayey foundation soils and reactivity (shrink swell movements) of foundation soils. Site preparation for construction of the proposed high school structures is anticipated to involve minor cut and fill operations. At completion of site preparation, it is anticipated bedrock will be exposed in some portion of the site. Where, no or minor fill placement occurred, the thickness of clayey foundation soils, comprising fill and residual soils, is anticipated to vary from about 0.5m to about 1.5m. Therefore, depending on assessed reactivity of foundation soils and extent of cut and fill operations, the building sites across the site are anticipated to belong to “Class A” or “Class M” in accordance with Australian Standard AS2870 (Reference 12). Therefore, we recommend site classification for individual building footprints are ascertained after completion of site preparation.

5.3.14 Floor Slabs

After preparation of site in accordance with the recommendations provided above, the foundation materials at ground floor levels of proposed school buildings and other structures will be controlled fill, residual soils and/or bedrock. Therefore, ground floor slabs for the proposed buildings and other structures may be designed and constructed as ground bearing slabs or suspended slabs supported by footings designed in accordance with recommendations provided in this report.

Ground floor slabs bearing on controlled fill and residual soils may be designed for “Class M” site in accordance with Australian Standard AS2870 (Reference 12). However, floor slabs bearing on bedrock may be designed to suit “Class A” site in accordance with Australian Standard AS2870 (Reference 12). Shrink swell movements of 20.0mm to 40.0mm is anticipated for “Class M” site but no significant shrink swell movement is anticipated for “Class A” site.

Alternatively, we recommend a Modulus of Subgrade Reaction value of 25kPa/mm and 40kPa/mm for ground floor slabs bearing on controlled fill/residual soils and bedrock respectively.

It should be noted that the site classification in accordance with AS2870 is applicable only for design of footing systems for a single dwelling, house, townhouse or similar structure that would be detached or separated by a party wall or common walls. Therefore, site recommended site classification may not be applicable for proposed school buildings.

5.3.15 Footings

Loading conditions for the proposed school buildings and other structures are not known at this stage. However, we consider that appropriate footings would comprise shallow footings (pad and strip footings) or deep footings (bored piers) founded on or socketed into bedrock. Deep footings would be preferable if footings are required to support high vertical loads as well as significant lateral and uplift pressures. As bedrock is anticipated at shallow depth, we do not anticipate footings for significant structures to be founded on controlled fill and residual soils. The recommended allowable bearing pressures for design of shallow and deep footings are presented in the following Table 13.

Table 13 – Recommended Bearing Pressures

Founding Material	Founding Depth from Existing Ground Surface (m)	Ultimate Bearing Pressure (kPa)	Allowable Bearing Pressure (kPa)	Ultimate Shaft Adhesion (kPa)	Allowable Shaft Adhesion (kPa)
Unit 1-Fill/Residual Soil	0.0	250.0	100.0	Ignore	Ignore
Unit 2-Bedrock – Class V	0.1-1.0	1500.0	700.0	150.0	70.0
Unit 3-Bedrock – Class IV	1.0-3.0	3000.0	1000.0	300.0	100.0
Unit 4-Bedrock – Class III/II	3.5->5.0	5000.0	2500.0	500.0	250.0

The following should be noted:

- The ultimate bearing pressure and shaft adhesion are based on the ultimate capacities mobilised at large displacements, about 5.0% to 10.0% of pile diameter or minimum footing width. These values assume a clean rock socket with a roughness Category of R2 or better (Reference 16).
- The allowable bearing pressure and shaft adhesion are based on the capacities mobilised at displacements of about 1.0% of pile diameter or minimum footing width.
- The ultimate and allowable bearing pressures for Units 2, 3 and 4 are based on the assumptions that the piers are socketed at last 0.3m into appropriate rock units.
- Differential settlements are estimated to be about halves the estimated total settlements.
- The shaft adhesions against uplift pressures are halves the shaft adhesions for compressive loads presented in above table.
- For limit state design, geotechnical strength reduction factor ϕ_g of 0.50 is recommended in accordance with AS2159 (Reference 8). However, reduction factor ϕ_g can be increased up to 0.7 to 0.8 if pile design is verified by analyses of pile load tests and sufficient construction monitoring is carried out.

It is preferable that the footings are founded on similar foundation. As depths of bedrock with the recommended bearing pressures are anticipated to vary across the site, the founding depths of footings to be constructed will also vary. Therefore, an experienced Geotechnical Engineer should confirm bearing pressures at founding levels during construction, on the basis of assessment made during footing excavation or pier hole drilling.

5.3.16 Slope Stability Assessment

At existing site conditions events of slope failures across the site is “Unlikely” (Reference 17). Even if a slope failure occurs, consequences of such slope failure in the site to the property would be "Minor" resulting in limited damage to part of structure or part of site requiring some stabilisation. Therefore, the site for the proposed Activity is assessed to have a "Very Low to Low Risk” to the property at existing conditions. Therefore, the site is suitable for proposed Activity from slope stability considerations. However, earthwork for proposed activity may involve some cut and fill operations that will increase likelihood of slope failures. It is also our assessment that the risk of slope instability across the site can be maintained at “Low” so that the site is suitable for proposed Activity from slope stability considerations provided the following:

- Earthworks, including excavation and fill placement, are completed in accordance with recommendations provided in an IGI report.

- Design and construction of batter slopes, retaining structures, ground floor slabs and footings of buildings are carried out in accordance with recommendations provided in this report.

6.0 POTENTIAL GEOTECHNICAL CONSTRAINTS OR RISKS

Based on anticipated site conditions, the potential geotechnical constraints or risks due to proposed Activity include the following.

- The risk of variability in the depth to bedrock across the site
- The risk of excessive erosion of soils

Boreholes indicate that the depth to bedrock across the site varies from about 0.1m to 0.8m from existing ground surface. Likewise, the depths to bedrock Unit 3 and 4 vary across the site. It will be preferably that the footings of proposed buildings/structures are founded on bedrock of similar strength or same unit. Therefore, designer of buildings should consider impacts of these variabilities on design and costing of the buildings.

Fill and residual soils across the site generally comprises clayey soils accessed to be susceptible to excessive erosion. Therefore, designer of the activity should consider impacts for erosion and prepare a management plan to minimise the impacts from erosion.

7.0 MITIGATION MEASURES FOR GEOTECHNICAL RISKS

As discussed above in this report, the potential geotechnical risks on proposed high school construction include variabilities in depths to bedrock of varying strengths and presence of erodible soils.

The geotechnical risks associated with variabilities in depth to bedrock of varying strengths can be addressed by conducting inspection during construction stage. However, geotechnical information presented in this report is adequate for structural design and cost management.

Likewise, constrained associated with erodible soil can be addressed if earthworks are carried out in accordance with an appropriate Soil Management Plan prepared in accordance with recommendation provided in Department of Housing Guidelines (Reference 11).

Table 14 in the following page presents recommended mitigation measures to address these geotechnical constraints or risks so that the residual risks are “Low” and the site is suitable for the proposed Activity.

Table 14 – Recommended Mitigation Measures to Manage Geotechnical Risks

Project Stage Design (D) Construction (C) Operation (O)	**Mitigation Measures**	**Reason for Mitigation Measure**	**Relevant Section of Report**
D, C & O	The designer should recognise that the subsurface soils across the site are susceptible to erosion and therefore disturbance and excavation of soils across the site should be carried out in accordance Soil Management Plan (SMP) developed in accordance with Guidelines provided in NSW Department of Housing, Managing Urban Stormwater, Soils and Construction, 1998. The cost for management of erodible soil should be considered in project costing.	To manage adverse impacts from the erodible soils to proposed activity and vice versa and to develop appropriate soil management plan to reduce impact on environment and variation claims during construction stage.	Section 5.3.9
D, C & O	The designer should recognise variability in the depth to bedrock of varying strengths to ascertain that the designs of activities are appropriate to actual foundation conditions and its impact on project design and costing. The depth to bedrock will need to be confirmed by inspections during construction stage	To reduce the risk or uncertainties due to variation in depths to bedrock of varying strengths so that actual founding depths for piers supporting buildings and other major structures are known. This means appropriate, economical and reliable foundation design can be achieved and potential variation claims during construction stage can be minimised. Appropriate and economical design will ensure optimal use of steel, concrete etc and minimal environmental impacts.	Section 5.3.14 & 5.3.15
D & C	The designer should recognise that the subsurface soils across the site are reactive and therefore design of ground bearing slabs should be appropriate to assessed site classification	To ensure design is appropriate to the site conditions and minimise variation claims during construction stage.	Section 5.3.13

8.0 SIGNIFICANCE OF ENVIRONMENTAL IMPACTS

Based on nature of potential geotechnical risks or issues at the site, it is our assessment that the potential impacts of the proposed Activity can be appropriately mitigated or managed in accordance with the recommended mitigation measures presented in Table 14 so that the residual risk is "Low". Therefore, from geotechnical engineering consideration, it is determined that the extent and nature of potential impacts from the proposed Activity are "Low" and will not have significant impact on the locality, community and/or the environment.

9.0 CONCLUSIONS

Based on results of PGDS and IGI, it is our assessment that 37 Hope Street at Melrose Park is suitable for construction of Melrose Park High School from geotechnical engineering considerations provided (1) geotechnical constraints imposed by variability in depth of bedrock of varying strengths and presence of erodible soils are addressed in accordance with mitigation measures provided in this report; and (2) site preparation and design of floor slabs and footings of proposed buildings are carried out in accordance to geotechnical recommendations provided in this report. Therefore, from geotechnical engineering considerations, the extent and nature of potential impacts from the proposed Activity are "Low" and will not have significant impact on the locality, community and/or the environment.

If you have any questions, please do not hesitate to contact the undersigned.

Yours faithfully
GEOTECHNIQUE PTY LTD

INDRA JWORCHAN
Principal Geotechnical Engineer

10.0 LIST OF REFERENCES

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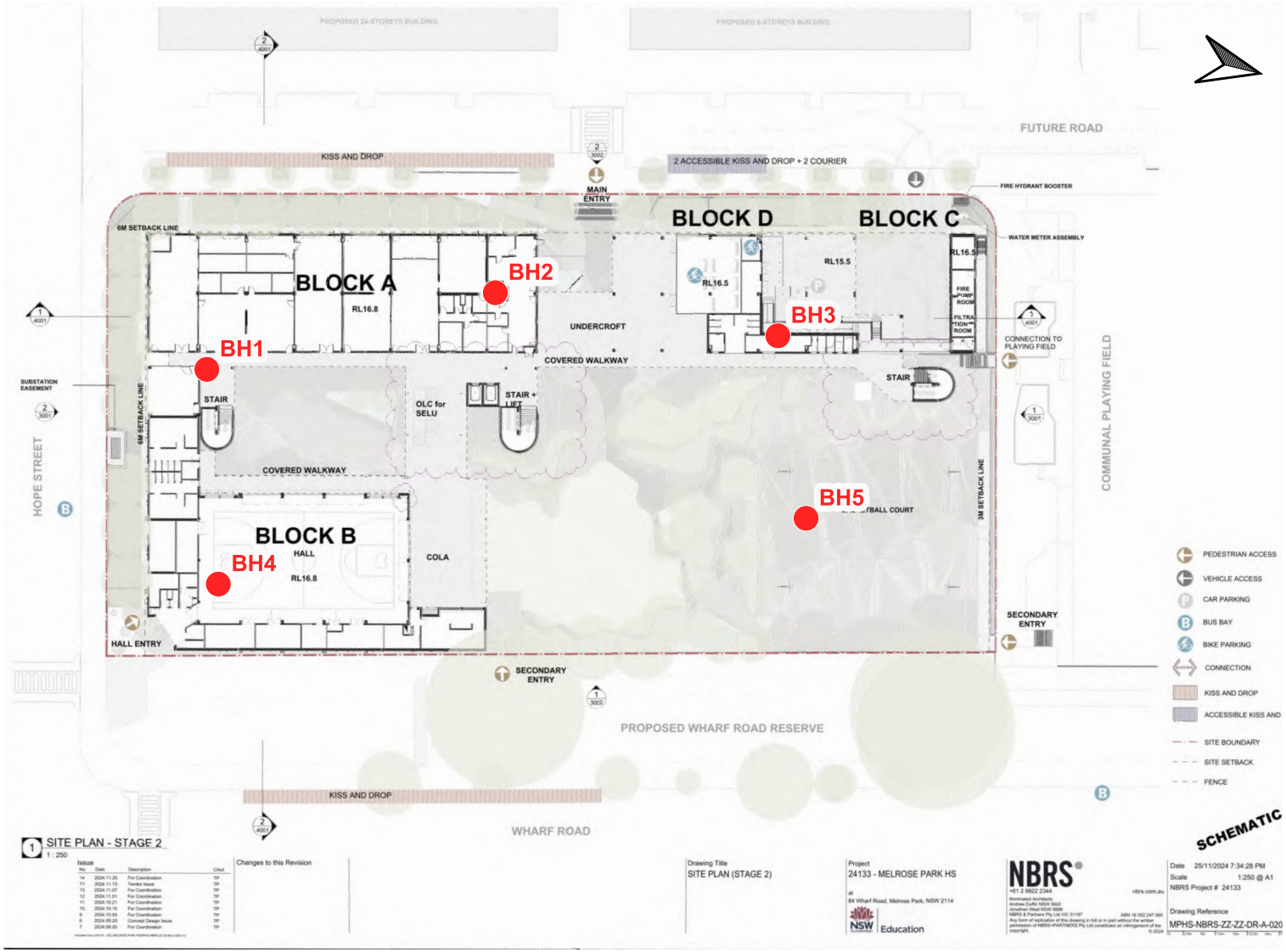
ATTACHMENT A

Drawing No 20468/4-AA1 Plan Showing Borehole Locations and Borehole Logs



LEGEND

Borehole

0 10 20 30 40 m

1:1000

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NOTES
1. Site Features are indicative and not to scale.
2. This drawing has been produced using a base plan provided by othered to which additional information e.g test pits, horehole locations or notes have meen added. some or all of the plan may not be relivent at the time of producing this drawing.

SOURCES
1. Base map: Site Plan (stage 2); Project ID 24155-Melrose Park HS; Revision 14; By NBRS & Partners Pty Ltd; Dated 25/11/2024.

PROJECT: PROPOSED NEW HIGH SCHOOL - CNR HOPE STREET & WHARF ROAD, MELROSE PARK - CONTRACT ID DDWWO05601/23

JOB NUMBER: 20468/4

TITLE: BOREHOLE LOCATIONS

CLIENT: NSW DEPARTMENT OF EDUCATION - SCHOOL INFRASTRUCTUR

Drawing number: AA1
Drawn by: Jack Scott Herben
Date: 10/12/2024

Revision: 0
Page size: A4

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engineering log - borehole

Client : SINSW
Project : Proposed School
Location : Corner Wharf Road & Hope Street, Melrose Park

Job No. : 20468/4
Borehole No. : BH1
Date : 2/12/2024
Logged/Checked by: JH

drill model and mounting : Commachio Track Mounted Geo 305 **slope :** **deg.** **R.L. surface :** 16.26

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
TC bit auger	Dry					0			FILL: Gravelly Clay, low plasticity, grey	M			Well compacted
				DS					SHALE: brown-grey, highly weaathered, low to medium strength				Bedrock
						0.5			Moderately weathered, low to medium strength				
				DS		1							
				SPT	20, 10, 8/20mm HB N=R	1.5							
						2							
						2.5							
									BH1 continue coring at 2.64m				
						3							
						3.5							
						4							
						4.5							

GEOTECHNIQUE
PTY LTD

engineering log
cored borehole

Client : SINSW
Project : Proposed School
Location : Corner Wharf Road & Hope Street, Melrose Park

Job No. : 20468/4
Borehole No. : BH1
Date : 2/12/2024
Logged/Checked by : JH

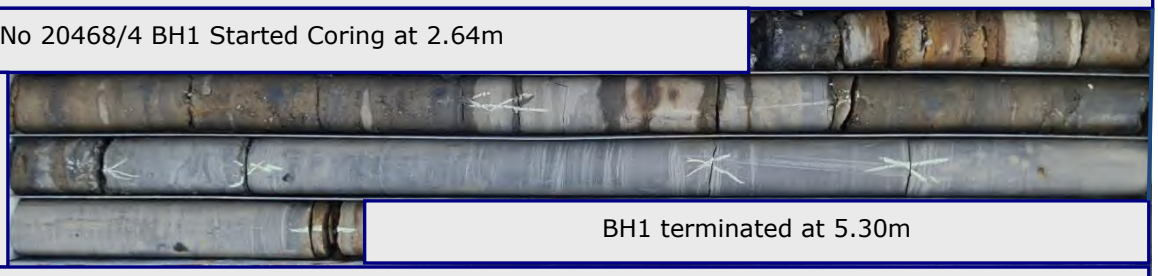
drill model and mounting : Cammachio Tack Mounted Geo **slope :** **deg.** **R.L. surface :** 16.26

core size: NMLC **bearing :** 90 **deg.** **datum :** AHD

barrel lift	water loss/level	depth of R.L. in meters	graphic log	CORE DESCRIPTION rock type, grain characteristics, colour, structure, minor components.	weathering	strength	point load index strength $I_S(50)$ EL VL L M H VH	DEFECT DETAILS defect spacing (mm) 2000 1000 500 300 100 50	DESCRIPTION type, inclination, thickness, planarity, roughness, coating. Specific / General
		2.5		Start coring BH1 @2.64m					
				SHALE, grey with iron bands	MW	M			2.73m: Bp, Pl, Ro, Cn 2.78m: Bp, Pl, Ro, Sn 2.86m: Bp, Pl, Ro, Sn 2.95m: Bp, Pl, Ro, Cn
		3							3.15m: Bp, Pl, Ro, Cn
				@3.2m, grey	MW-SW	M-H			3.26-3.27m: Bp=3°, Pl, Ro, Cn
		3.5							3.53m: Bp, Pl, Ro, Cn 3.56m: Bp, Pl, Ro, Vn 3.62m: Bp, Pl, Ro, Cn 3.71m: Bp, Cu, Ro, Cn
		4							4.05m: Bp, Pl, Ro, Cn 4.20m: Bp, Pl, Ro, Cn
		4.5							
					SW	H-VH			
		5		@5.26m, grey with ironstone bands.					5.26-5.28m: XWS= 20mm
				BH1 terminated at 5.31m					
		5.5							
		6							
		6.5							
		7							

GEOTECHNIQUE

Job No 20468/4 BH1 Started Coring at 2.64m



BH1 terminated at 5.30m

IJ.mh/24.07.2015

GEOTECHNIQUE
PTY LTD

engineering log - borehole

Client : SINSW
Project : Proposed School
Location : Corner Wharf Road & Hope Street, Melrose Park

Job No. : 20468/4
Borehole No. : BH2
Date : 2/12/2024-3/12/2024
Logged/Checked by: JH

drill model and mounting : Commachio Track Mounted Geo 305 **slope :** **deg.** **R.L. surface :** 16.00

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
TC bit auger	Dry					0			FILL: Gravelly Clay, low plasticity, grey	M			Well compacted
				DS		0.5			SHALE: brown-grey, highly to moderately weathered, low strength with clay lenses				Bedrock
				SPT	10, 12, 18 N=30	1.5							
						2			Grey, moderately weathered, low strength				
						2.5							
						3			BH2 continue coring at 2.95m				
						3.5							
						4							
						4.5							

GEOTECHNIQUE
PTY LTD

engineering log
cored borehole

Client : SINSW
Project : Proposed School
Location : Corner Wharf Road & Hope Street, Melrose Park

Job No. : 20468/4
Borehole No. : BH2
Date : 3/12/2024
Logged/Checked by : JH

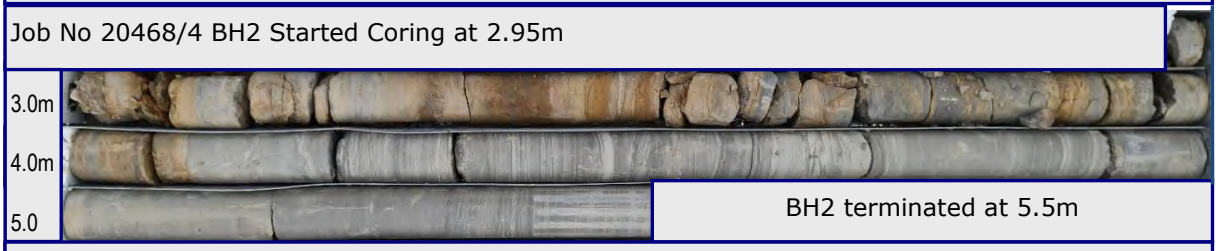
drill model and mounting : Cammachio Tack Mounted Geo **slope :** **deg.** **R.L. surface :** 16.00

core size: NMLC **bearing :** 90 **deg.** **datum :** AHD

barrel lift	water loss/level	depth of R.L. in meters	graphic log	CORE DESCRIPTION rock type, grain characteristics, colour, structure, minor components.	weathering	strength	point load index strength $I_S(50)$ EL VL L M H VH	DEFECT DETAILS defect spacing (mm) 2000 1000 500 300 100 50	DESCRIPTION type, inclination, thickness, planarity, roughness, coating. Specific / General
		2.5		Start coring BH2 @2.95m					
		3		SHALE, pale grey, with iron bands	MW	M			3.03-3.05m: Cs, XWS=10mm 3.14m: Bp, Pl, Ro, Cn 3.21m: Bp, Pl, Ro, Cn 3.22m: Bp, Pl, Ro, Cn 3.31-3.32m: Is(clay)= 10mm
		3.5							3.38-3.73m: XWS=350mm
		4							3.78m: Bp, Pl, Ro, Sn 3.90-3.92m: XWS= 20mm 3.94m: Bp,Pl, Ro, Sn
					SW	VH			4.07m: Bp=2°, Pl, Ro, Sn 4.24m: Bp, Pl, Ro, Cn 4.35m: Bp, Pl, Ro, Cn
		4.5							
		5							4.94m: Bp, Pl, Ro, Cn
				@5.26m, grey with ironstone bands.					
		5.5		BH2 terminated at 5.5m					
		6							
		6.5							
		7							

GEOTECHNIQUE

Job No 20468/4 BH2 Started Coring at 2.95m



BH2 terminated at 5.5m

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GEOTECHNIQUE
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engineering log - borehole

Client : SINSW
Project : Proposed School
Location : Corner Wharf Road & Hope Street, Melrose Park

Job No. : 20468/4
Borehole No. : BH3
Date : 3/12/2024
Logged/Checked by: JH

drill model and mounting : Commachio Track Mounted Geo 305 **slope :** **deg.** **R.L. surface :** 15.48

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
TC bit auger	Dry			DS		0		CI-CH	Silty CLAY, medium to high plasticity, brown mottled grey, with shale fragments	M<PL	F-St		Residual
						0.5			SHALE: grey, highly to moderately weathered, low to medium strength				Bedrock
				SPT	10/ 40mm HB N=R								
									BH3 continue coring at 0.8m				
						1							
						1.5							
						2							
						2.5							
						3							
						3.5							
						4							
						4.5							

GEOTECHNIQUE
PTY LTD

engineering log
cored borehole

Client : SINSW
Project : Proposed School
Location : Corner Wharf Road & Hope Street, Melrose Park

Job No. : 20468/4
Borehole No. : BH3
Date : 3/12/2024
Logged/Checked by : JH

drill model and mounting : Cammachio Tack Mounted Geo **slope :** **deg.** **R.L. surface :** 15.48

core size: NMLC **bearing :** 90 **deg.** **datum :** AHD

barrel lift	water loss/level	depth of R.L. in meters	graphic log	CORE DESCRIPTION rock type, grain characteristics, colour, structure, minor components.	weathering	strength	point load index strength $I_S(50)$ EL VL L M H VH	DEFECT DETAILS defect spacing (mm) 2000 1000 500 300 100 50	DESCRIPTION type, inclination, thickness, planarity, roughness, coating. Specific / General
		0.5		Start coring BH3 @0.8m					
				Coreloss					
		1		SHALE, pale grey with iron bands	HW	L			frequent bedding parting
		1.5							
		2							
		2.5							
		3							
				@3.25m grey with iron bands	HW-MW				3.28m: Bp, Pl, Ro, Sn 3.29-3.43m: XWS=140mm
		3.5			MW				3.21m: Bp, Pl, Ro, Cn 3.515-5.535m:Bp=4°St,Ro,Sn 3.61m:Bp, Pl, Ro, Sn 3.65-3.66m: Bp=2°,Pl, Ro, Sn 3.72-3.76m:XWS = 40mm
		4							3.82-3.98: Jo=80°, Pl, Ro, Cg 4.03m: BP=1°, Pl, Ro, Sn 4.05: Bp=1°,Pl, Ro, Sn 4.14m:Bp=1°, Pl, Ro, Sn 4.21m:Bp, Pl, Ro Sn
						L-M			4.25-4.39m: Jo=80°, Ir, Ro, Sn
		4.5							4.47m: Bp, Pl, Ro, Sn 4.495-4.505m:Cs, XWM= 10mm 4.665m:Bp, Pl, Ro, Sn 4.87m-4.90m: Cs, XWS=30mm 4.96-5.0m: Jo=70°, Pl, Ro, Cn
		5		BH3 terminated at 5.0m					

GEOTECHNIQUE

Job No 20468/4 BH3 Started Coring at 0.8m

Core Loss 0.2m

1.0m
2.0m
3.0m
4.0m

BH3 terminated at 5.0m

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GEOTECHNIQUE
PTY LTD

engineering log - borehole

Client : SINSW
Project : Proposed School
Location : Corner Wharf Road & Hope Street, Melrose Park

Job No. : 20468/4
Borehole No. : BH4
Date : 2/12/2024
Logged/Checked by: JH

drill model and mounting : Commachio Track Mounted Geo 305 **slope :** **deg.** **R.L. surface :** 16.04

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
TC bit auger	Dry					0			FILL: Gravelly Clay, low plasticity, grey	M			Well compacted
				DS		0.5			SHALE: brown-grey, highly to moderately weathered, low to medium strength				Bedrock
				DS		1			Moderately weathered, medium strength				
				SPT	18/ 130mm HB N= 30	1.5							
						2			BH4 terminated at 1.63m due to SPT refusal				
						2.5							
						3							
						3.5							
						4							
						4.5							

GEOTECHNIQUE
PTY LTD

engineering log - borehole

Client : SINSW
Project : Proposed School
Location : Corner Wharf Road & Hope Street, Melrose Park

Job No. : 20468/4
Borehole No. : BH5
Date : 03/12/2024
Logged/Checked by: JH

drill model and mounting : Commachio Track Mounted Geo 305 **slope :** **deg.** **R.L. surface :** 15.21

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
TC bit auger	Dry			U50		0		CI-CH	Silty CLAY, medium to high plasticity, brown mottled grey	M<PL	F-St		Residual
				DS									
				DS		0.5							
				SPT	3, 4, 12/ 20mm HB N=R								
									SHALE: brown-grey, highly to moderately weathered, low to medium strength with ironstone				Bedrock
						1			BH5 terminated at 0.85m due to SPT refusal				
						1.5							
						2							
						2.5							
						3							
						3.5							
						4							
						4.5							

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Log Symbols & Abbreviations (Non-cored Borehole Log)

Log Column	Symbol/Value	Description
Drilling Method	V-bit TC-bit RR DB BB	Hardened steel 'V' shaped bit attached to auger Tungsten Carbide bit attached to auger Tricone (Rock Roller) bit Drag bit Blade bit
Groundwater	Dry  	Groundwater not encountered to the drilled or auger refusal depth Groundwater level at depths shown on log Groundwater seepage at depths shown on log
Environment Sample	GP G P	Glass bottle and plastic bag sample over depths shown on log Glass bottle sample over depths shown on log Plastic bag sample over depths shown on log
PID Reading	100	PID reading in ppm
Geotechnical Sample	DS DB U_{50}	Disturbed Small bag sample over depths shown on log Disturbed Bulk sample over depths shown on log Undisturbed 50mm tube sample over depths shown on log
Field Test	N=10 3,5,5 N=R 10,15/100	Standard Penetration Test (SPT) 'N' value. Individual numbers indicate blows per 150mm penetration. 'R' represents refusal to penetration in hard/very dense soils or in cobbles or boulders. The first number represents10 blows for 150mm penetration whereas the second number represents 15 blows for 100mm penetration where SPT met refusal
	DCP/PSP: 5 6 R/10	Dynamic Cone Penetration (DCP) or Perth Sand Penetrometer (PSP). Each number represents blows per 100mm penetration. 'R/10' represents refusal after 10mm penetration in hard/very dense soils or in gravels or boulders.
Classification	GP GW GM GC SP SW SM SC ML MI MH CL CI CH	Poorly Graded GRAVEL Well graded GRAVEL Silty GRAVEL Clayey GRAVEL Poorly graded SAND Well graded SAND Silty SAND Clayey SAND SILT / Sandy SILT / clayey SILT, low plasticity SILT / Sandy SILT / clayey SILT, medium plasticity SILT / Sandy SILT / clayey SILT, high plasticity CLAY / Silty CLAY / Sandy CLAY / Gravelly CLAY, low plasticity CLAY / Silty CLAY / Sandy CLAY / Gravelly CLAY, medium plasticity CLAY / Silty CLAY / Sandy CLAY / Gravelly CLAY, high plasticity
Moisture Condition Cohesive soils Cohesionless soils	 M<PL M=PL M>PL D M W	 Moisture content less than Plastic Limit Moisture content equal to Plastic Limit Moisture content to be greater than Plastic Limit Dry - Runs freely through hand Moist - Tends to cohere Wet - Tends to cohere
Consistency Cohesive soils	 VS S F St VSt H	**Term** / **Undrained shear strength, C_u (kPa)** / **Hand Penetrometer (Qu)** Very Soft / ≤12 / <25 Soft / >12 & ≤25 / 25 – 50 Firm / >25 & ≤50 / 50 – 100 Stiff / >50 & ≤100 / 100 – 200 Very Stiff / >100 & ≤200 / 200 – 400 Hard / >200 / >400
Density Index Cohesionless soils	 VL L M D VD	**Term** / **Density Index, I_D (%)** / **SPT 'N' (blows/300mm)** Very Loose / ≤15 / ≤5 Loose / >15 & ≤35 / >5 & ≤10 Medium Dense / >35 & ≤65 / >10 & ≤30 Dense / >65 & ≤85 / >30 & ≤50 Very Dense / >85 / >50
Hand Penetrometer	100 200	Unconfined compressive strength (q_u) in kPa determined using pocket penetrometer, at depths shown on log
Remarks	 Residual Alluvium Colluvial Aeolian Marine	Geological origin of soils Residual soils above bedrock River deposited Alluvial soils Gravity deposited Colluvial soils Wind deposited Aeolian soils Marine Soils

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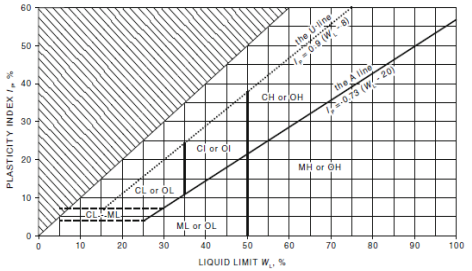
AS1726 : 2017– Unified Soil Classification System

Major Divisions		Particle size (mm)	Group Symbol	Typical Names	Field Identifications Sand and Gravels			Laboratory classification				
OVERSIZE	BOULDERS	>200						Use the gradation of material passing 63mm for classification of fractions according to the criteria given in 'Major Divisions'	% Fines (2)	Plasticity of Fine Fraction	$C_u = D_{60}/D_{10}$	$C_c = (D_{30})^2/(D_{10}D_{60})$	Notes
	COBBLES	63										
COARSE GRAINED SOIL (more than 65% of soil excluding oversize fraction is greater than 0.075mm)	GRAVEL (more than half of coarse fraction is larger than 2.36mm)	Coarse 19	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength				≤5	-	>4	between 1 and 3	1. Identify lines by the method given for fine grained soils 2. Borderline classifications occur when the percentage of fines (fraction smaller than 0.075mm size) is greater than 5% and less than 12%. Borderline classifications require the use of dual symbols e.g. SP-SM, GW-GC
		Medium 6.7	GP	Poorly graded gravels, gravel-sand mixtures, little or no fines, uniform gravels	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength				≤5	-	Fails to comply with above		
			GM	Silty gravels, gravel-sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength				≥12	Below 'A' line or I_p<4	-	-	
		Fine 2.36	GC	Clayey gravels, gravel-sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength				≥12	Above 'A' line or I_p>7	-	-	
	SAND (more than half of coarse fraction is smaller than 2.36mm)	Coarse 0.6	SW	Well-graded sands, gravelly sands, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength				≤5	-	>6	between 1 and 3	
		Medium 0.21	SP	Poorly graded sands and gravelly sands; little or no fines, uniform sands	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength				≤5	-	Fails to comply with above		
			SM	Silty sands, sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength				≥12	Below 'A' line or I_p<4	-	-	
		Fine 0.075	SC	Clayey sand, sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength				≥12	Above 'A' line of I_p>7	-	-	
FINE GRAINED SOIL (more than 35% of soil excluding oversize fraction is less than 0.075mm)					**Dry Strength**	**Dilatancy**	**Toughness**					
	SILT (0.075mm to 0.002mm) & CLAY (<0.002mm) Liquid Limit<50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	None to low	Slow to rapid	Low		More than 35% passing 0.075mm	Below 'A' line			
			CL, CI	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	Medium to high	None to very slow	Medium			Above 'A' line			
			OL	Organic silts and organic silty clays of low plasticity	Low to medium	Slow	Low			Below 'A' line			
	SILT (0.075mm to 0.002mm) & CLAY (<0.002mm) Liquid Limit>50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	Low to medium	None to slow	Low to medium			Below 'A' line			
			CH	Inorganic clays of medium to high plasticity, fat clays	High to very high	None	High			Above 'A' line			
			OH (1)	Organic clays of medium to high plasticity, organic silts	Medium to high	None to very slow	Low to medium			Below 'A' line			
	HIGHLY ORGANIC SOILS		Pt (1)	Peat and highly organic soils	Identified by colour, odour, spongy feel and generally by fibrous texture				Effervesces with H_2O_2				



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Log Symbols & Abbreviations (Cored Borehole Log)

Log Column	Symbol / Abbreviation	Description	
Core Size		Nominal Core Size (mm)	
	NQ	47	
	NMLC	52	
	HQ	63	
Water Loss	◀	Complete water loss	
	◁	Partial water loss	
Weathering (AS1726:2017)	RS	Residual Soil	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported
	XW	Extremely Weathered	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible
	HW	Highly Weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognizable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
	MW	Moderately Weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognizable, but shows little or no change of strength from fresh rock
	SW	Slightly Weathered	Rock is partially discoloured with staining or bleaching along joints but shows little or no change in strength from fresh rock
	FR	Fresh	Rock shows no sign of decomposition of individual minerals or colour changes
		Note : Where it is not possible to distinguish between HW and MW rock the term Distinctly Weathered (DW) may be used. DW is defined as 'Rock strength usually changed by weathering. The rock may be highly discoloured, usually by ironstaining. Porosity may be increased by leaching, or may be decreased by deposition of weathering products in pores'	
Strength (AS1726:2017)		**Term**	**Point Load Strength Index (I_{s50}, MPa)**
	VL	Very Low	≥0.03 ≤0.1
	L	Low	>0.1 ≤0.3
	M	Medium	>0.3 ≤1
	H	High	>1 ≤3
	VH	Very High	>3 ≤10
	EH	Extremely High	>10
Defect Spacing		**Description**	**Spacing (mm)**
		Extremely closely spaced	<20
		Very closely spaced	20 to 60
		Closely spaced	60 to 200
		Medium spaced	200 to 600
		Widely spaced	600 to 2000
		Very widely spaced	2000 to 6000
		Extremely widely spaced	>6000
Defect Description (AS1726:2017) Type			
	Pt	Parting	
	Jo	Joint	
	Sh	Sheared Surface	
	Sz	Sheared Zone	
	Ss	Sheared Seam	
	Cs	Crushed Seam	
	Is	Infilled Seam	
	Ews	Extremely Weathered Seam	
Macro-surface geometry	St	Stepped	
	Cu	Curved	
	Un	Undulating	
	Ir	Irregular	
	Pl	Planar	
Micro-surface geometry	Vro	Very Rough	
	Ro	Rough	
	Sm	Smooth	
	Po	Polished	
	Sl	Slickensided	
Coating or infilling	cn	clean	
	sn	stained	
	vn	veneer	
	cg	coating	

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AS1726 – Identification of Sedimentary Rocks for Engineering Purposes

Grain Size mm		Bedded rocks (mostly sedimentary)							
More than 20	20	Grain Size Description			At least 50% of grains are of carbonate			At least 50% of grains are of fine-grained volcanic rock	
	6	RUDACEOUS		CONGLOMERATE Rounded boulders, cobbles and gravel cemented in a finer matrix	LIMESTONE and DOLOMITE (undifferentiated)	Calcirudite		Fragments of volcanic ejecta in a finer matrix	SALINE ROCKS
	2			Breccia Irregular rock fragments in a finer matrix				Rounded grains AGGLOMERATE Angular grains VOLCANIC BRECCIA	Halite Anhydrite
	0.6	ARENACEOUS	Coarse	SANDSTONE Angular or rounded grains, commonly cemented by clay, calcite or iron minerals		Calcarenite		Cemented volcanic ash TUFF	Gypsum
	0.2		Medium	Quartzite Quartz grains and siliceous cement					
	0.06		Fine	Arkose Many feldspar grains Greywacke Many rock chips					
	0.002	ARGILLACEOUS		MUDSTONE	SILTSTONE Mostly silt	Calcareous Mudstone	Calcisiltite	CHALK	Fine-grained TUFF
	Less than 0.002			SHALE Fissile	CLAYSTONE Mostly clay		Calcilutite		Very fine-grained TUFF
Amorphous or crypto-crystalline				Flint: occurs as hands of nodules in the chalk Chert: occurs as nodules and beds in limestone and calcareous sandstone					COAL LIGNITE
				Granular cemented – except amorphous rocks					
				SILICEOUS	CALCAREOUS			SILICEOUS	CARBONACEOUS
				SEDIMENTARY ROCKS Granular cemented rocks vary greatly in strength, some sandstones are stronger than many Igneous rocks. Bedding may not show in hand specimens and is best seen in outcrop. Only sedimentary rocks, and some metamorphic rocks derived from them, contain fossils Calcareous rocks contain calcite (calcium carbonate) which effervesces with dilute hydrochloric acid					

AS1726 – Identification of Metamorphic and Igneous Rocks for Engineering Purposes

Obviously foliated rocks (mostly metamorphic)		Rocks with massive structure and crystalline texture (mostly igneous)						Grain size (mm)
Grain size description			Grain size description	Pegmatite			Pyrosenite	More than 20
		MARBLE						20
	GNEISS Well developed but often widely spaced foliation sometimes with schistose bands	QUARTZITE		GRANITE	Diorite	GABBRO	Peridorite	6
COARSE		Granulite	COARSE	These rocks are sometimes phorphyritic and are then described, for example, as porphyritic granite				
	Migmatite Irregularly foliated: mixed schists and gneisses	HORNFELS						2
	SCHIST Well developed undulose foliation; generally much mica	Amphibolite		Micorgranite	Microdiorite			0.6
MEDIUM		Serpentine	MEDIUM	These rocks are sometimes phorphyritic and are then described as porphyries		Dolerite		0.2
								0.06
	PHYLLITE Slightly undulose foliation; sometimes 'spotted'			RHYOLITE	ANDESITE			0.002
FINE	SLATE Well developed plane cleavage (foliation)		FINE	These rocks are sometimes phorphyritic and are then described as porphyries		BASALT		Less than 0.002
	Mylonite Found in fault zones, mainly in igneous and metamorphic areas			Obsidian	Volcanic glass			Amorphous or cryptocrystalline
CRYSTALLINE				Pale<----------->Dark				
SILICEOUS		Mainly SILICEOUS		ACID Much quartz	INTERMEDIATE Some quartz	BASIC Little or no quartz	ULTRA BASIC	
METAMORPHIC ROCKS Most metamorphic rocks are distinguished by foliation which may impart fissility. Foliation in gneisses is best observed in outcrop. Non-foliated metamorphics are difficult to recognize except by association. Any rock baked by contact metamorphism is described as 'hornfels' and is generally somewhat stronger than the parent rock Most fresh metamorphic rocks are strong although perhaps fissile			IGNEOUS ROCKS Composed of closely interlocking mineral grains. Strong when fresh; not porous Mode of occurrence : 1 Batholith; 2 Laccoliths; 3 Sills; 4 Dykes; 5 Lava Flows; 6 Veins					

ATTACHMENT B

Laboratory Test Results

Material Test Report

Report Number: **20468/4-1**
Issue Number: 1
Date Issued: 19/12/2024
Client: School Infrastructure NSW

Project Number: 20468/4
Project Name: Proposed Melrose Park High School
Project Location: cnr Hoe Street and Wharf Road, Melrose Park
Work Request: 89
Sample Number: S-89A
Date Sampled: 02/12/2024
Dates Tested: 09/12/2024 - 11/12/2024
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: In accordance with the test method
Sample Location: **BH1, Depth: 0.8 - 1.0**
Material: SHALE: brown-grey, moderately weathered, low to medium strength

Geotech Testing Pty Ltd
Penrith Laboratory
34 Borec Road Penrith NSW 2750
Phone: (02) 4722 2744
Email: matthew@geotech.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Mathew Morley
Laboratory Manager
NATA Accredited Laboratory Number: 2734

Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	34		
Plastic Limit (%)	19		
Plasticity Index (%)	**15**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	**8.0**		
Cracking Crumbling Curling	None		

Emerson Class Number of a Soil (AS 1289 3.8.1)		Min	Max
Emerson Class	**2**		
Soil Description	Shale		
Nature of Water	Distilled water		
Temperature of Water (^{o}C)	25		

Material Test Report

Report Number: **20468/4-1**
Issue Number: 1
Date Issued: 19/12/2024
Client: School Infrastructure NSW

Project Number: 20468/4
Project Name: Proposed Melrose Park High School
Project Location: cnr Hoe Street and Wharf Road, Melrose Park
Work Request: 89
Sample Number: S-89B
Date Sampled: 02/12/2024
Dates Tested: 09/12/2024 - 11/12/2024
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: In accordance with the test method
Sample Location: **BH 2 , Depth: 0.3 - 0.5**
Material: SHALE: brown-grey, highly to moderately weathered, low strength with clay lenses

Geotech Testing Pty Ltd
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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Mathew Morley
Laboratory Manager
NATA Accredited Laboratory Number: 2734

Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	34		
Plastic Limit (%)	14		
Plasticity Index (%)	**20**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	**10.0**		
Cracking Crumbling Curling	None		

Emerson Class Number of a Soil (AS 1289 3.8.1)		Min	Max
Emerson Class	**2**		
Soil Description	Gravelly Clay		
Nature of Water	Distilled Water		
Temperature of Water (^{o}C)	25		

Material Test Report

Geotech Testing Pty Ltd
Penrith Laboratory
34 Borec Road Penrith NSW 2750
Phone: (02) 4722 2744
Email: matthew@geotech.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Mathew Morley
Laboratory Manager
NATA Accredited Laboratory Number: 2734

Report Number: **20468/4-1**
Issue Number: 1
Date Issued: 19/12/2024
Client: School Infrastructure NSW

Project Number: 20468/4
Project Name: Proposed Melrose Park High School
Project Location: cnr Hoe Street and Wharf Road, Melrose Park
Work Request: 89
Sample Number: S-89C
Date Sampled: 02/12/2024
Dates Tested: 09/12/2024 - 11/12/2024
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method: In accordance with the test method
Sample Location: **BH 4, Depth: 1.0 - 1.4**
Material: SHALE: brown-grey, moderately weathered, medium strength

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	32		
Plastic Limit (%)	18		
Plasticity Index (%)	**14**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	**7.0**		
Cracking Crumbling Curling	None		

Emerson Class Number of a Soil (AS 1289 3.8.1)		Min	Max
Emerson Class	**6**		
Soil Description	Gravelly Clay		
Nature of Water	Distilled Water		
Temperature of Water (^{o}C)	25		

Material Test Report

Report Number: **20468/4-1**
Issue Number: 1
Date Issued: 19/12/2024
Client: School Infrastructure NSW

Project Number: 20468/4
Project Name: Proposed Melrose Park High School
Project Location: cnr Hoe Street and Wharf Road, Melrose Park
Work Request: 89
Dates Tested: 09/12/2024 - 10/12/2024
Location: Hoe Street and Wharf Road, Melrose Park

Geotech Testing Pty Ltd
Penrith Laboratory
34 Borec Road Penrith NSW 2750
Phone: (02) 4722 2744
Email: matthew@geotech.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Mathew Morley
Laboratory Manager
NATA Accredited Laboratory Number: 2734

Shrink Swell Index AS 1289 7.1.1 & 2.1.1					
Sample Number	S-89D				
Date Sampled	02/12/2024				
Date Tested	10/12/2024				
Material Source	**				
Sample Location	BH 5 (0.0 - 0.18)				
Inert Material Estimate (%)	**				
Pocket Penetrometer before (kPa)	6				
Pocket Penetrometer after (kPa)	4				
Shrinkage Moisture Content (%)	21.6				
Shrinkage (%)	**3.8**				
Swell Moisture Content Before (%)	24.2				
Swell Moisture Content After (%)	28.1				
Swell (%)	**3.0**				
Shrink Swell Index Iss (%)	**2.9**				
Visual Description	Red Clay, slightly dry sample				
Cracking	SC				
Crumbling	**				
Remarks	**				

Shrink Swell Index (Iss) reported as the percentage vertical strain per pF change in suction.
Cracking Terminology: UC Uncracked, SC Slightly Cracked, MC Moderately Cracked, HC Highly Cracked, FR Fragmented.
NATA Accreditation does not cover the performance of pocket penetrometer readings.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Indra Jworchan
Client	Geotech Testing Pty Ltd
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Project	**20600/2 393 Terrace Road, North Richmond**
Order Number	**20600/2**
Samples	61

LABORATORY DETAILS

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SGS Reference	**SE275923 R0**
Date Received	16/12/2024
Date Reported	23/12/2024

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES

Dong LIANG
Metals/Inorganics Team Leader

Shane MCDERMOTT
Laboratory Manager

Ying Ying ZHANG
Laboratory Technician

pH in soil (1:2) [AN101] Tested: 19/12/2024

PARAMETER	UOM	LOR	TP1 SOIL 0.4-0.5 13/12/2024 SE275923.001	TP1 SOIL 1.5-1.7 13/12/2024 SE275923.002	TP2 SOIL 0.4-0.6 13/12/2024 SE275923.003	TP2 SOIL 1.8-2.0 13/12/2024 SE275923.004	TP3 SOIL 0.4-0.6 13/12/2024 SE275923.005
pH (1:2)	pH Units	-	4.8	4.6	4.8	4.2	5.2

PARAMETER	UOM	LOR	TP3 SOIL 1.8-2.0 13/12/2024 SE275923.006	TP4 SOIL 0.5-0.7 13/12/2024 SE275923.007	TP4 SOIL 1.7-1.9 13/12/2024 SE275923.008	TP5 SOIL 0.3-0.5 13/12/2024 SE275923.009	TP5 SOIL 0.9-1.0 13/12/2024 SE275923.010
pH (1:2)	pH Units	-	4.5	4.1	4.1	4.9	4.7

PARAMETER	UOM	LOR	TP6 SOIL 0.5-0.7 13/12/2024 SE275923.011	TP6 SOIL 2.0-2.2 13/12/2024 SE275923.012	TP7 SOIL 0.5-0.7 13/12/2024 SE275923.013	TP7 SOIL 1.8-2.0 13/12/2024 SE275923.014	TP8 SOIL 0.5-0.6 13/12/2024 SE275923.015
pH (1:2)	pH Units	-	4.2	4.8	4.8	4.1	5.1

PARAMETER	UOM	LOR	TP8 SOIL 1.4-1.5 13/12/2024 SE275923.016	TP9 SOIL 0.5-0.6 13/12/2024 SE275923.017	TP9 SOIL 1.8-2.0 13/12/2024 SE275923.018	TP10 SOIL 0.5-0.7 13/12/2024 SE275923.019	TP10 SOIL 1.4-1.5 13/12/2024 SE275923.020
pH (1:2)	pH Units	-	4.5	5.0	4.4	5.9	4.2

PARAMETER	UOM	LOR	TP11 SOIL 0.3-0.5 13/12/2024 SE275923.021	TP11 SOIL 1.2-1.4 13/12/2024 SE275923.022	TP12 SOIL 0.4-0.5 13/12/2024 SE275923.023	TP12 SOIL 0.8-1.0 13/12/2024 SE275923.024	TP13 SOIL 0.4-0.6 13/12/2024 SE275923.025
pH (1:2)	pH Units	-	4.6	4.6	4.3	4.5	4.6

PARAMETER	UOM	LOR	TP13 SOIL 1.3-1.5 13/12/2024 SE275923.026	TP14 SOIL 0.2-0.4 13/12/2024 SE275923.027	TP14 SOIL 0.7-0.8 13/12/2024 SE275923.028	TP15 SOIL 0.4-0.5 13/12/2024 SE275923.029	TP15 SOIL 1.1-1.3 13/12/2024 SE275923.030
pH (1:2)	pH Units	-	4.2	4.5	4.5	4.8	4.5

PARAMETER	UOM	LOR	TP16 SOIL 0.6-0.7 13/12/2024 SE275923.031	TP16 SOIL 1.3-1.4 13/12/2024 SE275923.032	TP17 SOIL 0.2-0.4 13/12/2024 SE275923.033	TP18 SOIL 0.5-0.6 13/12/2024 SE275923.034	TP18 SOIL 1.7-1.8 13/12/2024 SE275923.035
pH (1:2)	pH Units	-	7.1	4.5	5.2	4.7	4.6

pH in soil (1:2) [AN101] Tested: 19/12/2024 (continued)

PARAMETER	UOM	LOR	TP19 SOIL 0.5-0.6 13/12/2024 SE275923.036	TP20 SOIL 0.6-0.7 13/12/2024 SE275923.037	TP20 SOIL 1.9-2.1 13/12/2024 SE275923.038	TP21 SOIL 0.4-0.5 13/12/2024 SE275923.039	TP21 SOIL 1.4-1.5 13/12/2024 SE275923.040
pH (1:2)	pH Units	-	5.1	5.3	4.7	4.8	4.5

PARAMETER	UOM	LOR	TP22 SOIL 0.3-0.5 13/12/2024 SE275923.041	TP23 SOIL 0.5-0.6 13/12/2024 SE275923.042	TP24 SOIL 0.4-0.6 13/12/2024 SE275923.043	TP25 SOIL 0.4-0.6 13/12/2024 SE275923.044	TP25 SOIL 2.0-2.3 13/12/2024 SE275923.045
pH (1:2)	pH Units	-	5.3	4.9	4.4	4.8	4.6

PARAMETER	UOM	LOR	TP26 SOIL 0.5-0.6 13/12/2024 SE275923.046	TP26 SOIL 2.0-2.1 13/12/2024 SE275923.047	BH1 SOIL 0.5-1.0 13/12/2024 SE275923.048	BH1 SOIL 1.5-2.0 13/12/2024 SE275923.049	BH2 SOIL 0.5-1.0 13/12/2024 SE275923.050
pH (1:2)	pH Units	-	4.9	4.4	4.9	4.5	4.4

PARAMETER	UOM	LOR	BH2 SOIL 1.5-2.0 13/12/2024 SE275923.051	BH3 SOIL 0.5-1.0 13/12/2024 SE275923.052	BH3 SOIL 3.0-3.5 13/12/2024 SE275923.053	BH4 SOIL 0.5-1.0 13/12/2024 SE275923.054	BH4 SOIL 2.5-3.0 13/12/2024 SE275923.055
pH (1:2)	pH Units	-	4.6	4.1	4.5	4.8	5.7

PARAMETER	UOM	LOR	BH5 SOIL 0.4-0.6 13/12/2024 SE275923.056	BH6 SOIL 0.5-0.95 13/12/2024 SE275923.057	BH6 SOIL 2.5-2.6 13/12/2024 SE275923.058	BH7 SOIL 0.4-0.5 13/12/2024 SE275923.059	BH7 SOIL 1.5-1.85 13/12/2024 SE275923.060
pH (1:2)	pH Units	-	5.1	4.8	5.4	5.0	5.2

PARAMETER	UOM	LOR	BH8 SOIL 0.5-1.0 13/12/2024 SE275923.061
pH (1:2)	pH Units	-	4.7

Conductivity and TDS by Calculation - Soil [AN106] Tested: 19/12/2024

PARAMETER	UOM	LOR	TP1 SOIL 0.4-0.5 13/12/2024 SE275923.001	TP1 SOIL 1.5-1.7 13/12/2024 SE275923.002	TP2 SOIL 0.4-0.6 13/12/2024 SE275923.003	TP2 SOIL 1.8-2.0 13/12/2024 SE275923.004	TP3 SOIL 0.4-0.6 13/12/2024 SE275923.005
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	350	260	430	650	130

PARAMETER	UOM	LOR	TP3 SOIL 1.8-2.0 13/12/2024 SE275923.006	TP4 SOIL 0.5-0.7 13/12/2024 SE275923.007	TP4 SOIL 1.7-1.9 13/12/2024 SE275923.008	TP5 SOIL 0.3-0.5 13/12/2024 SE275923.009	TP5 SOIL 0.9-1.0 13/12/2024 SE275923.010
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	240	1100	1100	130	130

PARAMETER	UOM	LOR	TP6 SOIL 0.5-0.7 13/12/2024 SE275923.011	TP6 SOIL 2.0-2.2 13/12/2024 SE275923.012	TP7 SOIL 0.5-0.7 13/12/2024 SE275923.013	TP7 SOIL 1.8-2.0 13/12/2024 SE275923.014	TP8 SOIL 0.5-0.6 13/12/2024 SE275923.015
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	1200	910	440	720	340

PARAMETER	UOM	LOR	TP8 SOIL 1.4-1.5 13/12/2024 SE275923.016	TP9 SOIL 0.5-0.6 13/12/2024 SE275923.017	TP9 SOIL 1.8-2.0 13/12/2024 SE275923.018	TP10 SOIL 0.5-0.7 13/12/2024 SE275923.019	TP10 SOIL 1.4-1.5 13/12/2024 SE275923.020
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	560	190	540	220	520

PARAMETER	UOM	LOR	TP11 SOIL 0.3-0.5 13/12/2024 SE275923.021	TP11 SOIL 1.2-1.4 13/12/2024 SE275923.022	TP12 SOIL 0.4-0.5 13/12/2024 SE275923.023	TP12 SOIL 0.8-1.0 13/12/2024 SE275923.024	TP13 SOIL 0.4-0.6 13/12/2024 SE275923.025
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	100	230	490	230	180

PARAMETER	UOM	LOR	TP13 SOIL 1.3-1.5 13/12/2024 SE275923.026	TP14 SOIL 0.2-0.4 13/12/2024 SE275923.027	TP14 SOIL 0.7-0.8 13/12/2024 SE275923.028	TP15 SOIL 0.4-0.5 13/12/2024 SE275923.029	TP15 SOIL 1.1-1.3 13/12/2024 SE275923.030
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	160	560	200	82	78

PARAMETER	UOM	LOR	TP16 SOIL 0.6-0.7 13/12/2024 SE275923.031	TP16 SOIL 1.3-1.4 13/12/2024 SE275923.032	TP17 SOIL 0.2-0.4 13/12/2024 SE275923.033	TP18 SOIL 0.5-0.6 13/12/2024 SE275923.034	TP18 SOIL 1.7-1.8 13/12/2024 SE275923.035
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	170	170	60	130	460

Conductivity and TDS by Calculation - Soil [AN106] Tested: 19/12/2024 (continued)

PARAMETER	UOM	LOR	TP19 SOIL 0.5-0.6 13/12/2024 SE275923.036	TP20 SOIL 0.6-0.7 13/12/2024 SE275923.037	TP20 SOIL 1.9-2.1 13/12/2024 SE275923.038	TP21 SOIL 0.4-0.5 13/12/2024 SE275923.039	TP21 SOIL 1.4-1.5 13/12/2024 SE275923.040
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	94	470	610	270	230

PARAMETER	UOM	LOR	TP22 SOIL 0.3-0.5 13/12/2024 SE275923.041	TP23 SOIL 0.5-0.6 13/12/2024 SE275923.042	TP24 SOIL 0.4-0.6 13/12/2024 SE275923.043	TP25 SOIL 0.4-0.6 13/12/2024 SE275923.044	TP25 SOIL 2.0-2.3 13/12/2024 SE275923.045
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	150	140	110	280	330

PARAMETER	UOM	LOR	TP26 SOIL 0.5-0.6 13/12/2024 SE275923.046	TP26 SOIL 2.0-2.1 13/12/2024 SE275923.047	BH1 SOIL 0.5-1.0 13/12/2024 SE275923.048	BH1 SOIL 1.5-2.0 13/12/2024 SE275923.049	BH2 SOIL 0.5-1.0 13/12/2024 SE275923.050
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	160	810	410	490	490

PARAMETER	UOM	LOR	BH2 SOIL 1.5-2.0 13/12/2024 SE275923.051	BH3 SOIL 0.5-1.0 13/12/2024 SE275923.052	BH3 SOIL 3.0-3.5 13/12/2024 SE275923.053	BH4 SOIL 0.5-1.0 13/12/2024 SE275923.054	BH4 SOIL 2.5-3.0 13/12/2024 SE275923.055
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	330	1100	870	160	390

PARAMETER	UOM	LOR	BH5 SOIL 0.4-0.6 13/12/2024 SE275923.056	BH6 SOIL 0.5-0.95 13/12/2024 SE275923.057	BH6 SOIL 2.5-2.6 13/12/2024 SE275923.058	BH7 SOIL 0.4-0.5 13/12/2024 SE275923.059	BH7 SOIL 1.5-1.85 13/12/2024 SE275923.060
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	97	130	38	36	24

PARAMETER	UOM	LOR	BH8 SOIL 0.5-1.0 13/12/2024 SE275923.061
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	50

Conductivity (1:2) in soil [AN106] Tested: 19/12/2024

PARAMETER	UOM	LOR	TP1 SOIL 0.4-0.5 13/12/2024 SE275923.001	TP1 SOIL 1.5-1.7 13/12/2024 SE275923.002	TP2 SOIL 0.4-0.6 13/12/2024 SE275923.003	TP2 SOIL 1.8-2.0 13/12/2024 SE275923.004	TP3 SOIL 0.4-0.6 13/12/2024 SE275923.005
Conductivity (1:2) @25 C*	µS/cm	1	460	490	630	980	220
Resistivity (1:2)*	ohm cm	-	2200	2000	1600	1000	4500

PARAMETER	UOM	LOR	TP3 SOIL 1.8-2.0 13/12/2024 SE275923.006	TP4 SOIL 0.5-0.7 13/12/2024 SE275923.007	TP4 SOIL 1.7-1.9 13/12/2024 SE275923.008	TP5 SOIL 0.3-0.5 13/12/2024 SE275923.009	TP5 SOIL 0.9-1.0 13/12/2024 SE275923.010
Conductivity (1:2) @25 C*	µS/cm	1	480	1700	1800	170	220
Resistivity (1:2)*	ohm cm	-	2100	600	550	5900	4600

PARAMETER	UOM	LOR	TP6 SOIL 0.5-0.7 13/12/2024 SE275923.011	TP6 SOIL 2.0-2.2 13/12/2024 SE275923.012	TP7 SOIL 0.5-0.7 13/12/2024 SE275923.013	TP7 SOIL 1.8-2.0 13/12/2024 SE275923.014	TP8 SOIL 0.5-0.6 13/12/2024 SE275923.015
Conductivity (1:2) @25 C*	µS/cm	1	1800	1500	690	1600	470
Resistivity (1:2)*	ohm cm	-	550	660	1500	640	2200

PARAMETER	UOM	LOR	TP8 SOIL 1.4-1.5 13/12/2024 SE275923.016	TP9 SOIL 0.5-0.6 13/12/2024 SE275923.017	TP9 SOIL 1.8-2.0 13/12/2024 SE275923.018	TP10 SOIL 0.5-0.7 13/12/2024 SE275923.019	TP10 SOIL 1.4-1.5 13/12/2024 SE275923.020
Conductivity (1:2) @25 C*	µS/cm	1	870	240	820	380	650
Resistivity (1:2)*	ohm cm	-	1100	4200	1200	2600	1600

PARAMETER	UOM	LOR	TP11 SOIL 0.3-0.5 13/12/2024 SE275923.021	TP11 SOIL 1.2-1.4 13/12/2024 SE275923.022	TP12 SOIL 0.4-0.5 13/12/2024 SE275923.023	TP12 SOIL 0.8-1.0 13/12/2024 SE275923.024	TP13 SOIL 0.4-0.6 13/12/2024 SE275923.025
Conductivity (1:2) @25 C*	µS/cm	1	150	370	1100	770	270
Resistivity (1:2)*	ohm cm	-	6600	2700	950	1300	3800

PARAMETER	UOM	LOR	TP13 SOIL 1.3-1.5 13/12/2024 SE275923.026	TP14 SOIL 0.2-0.4 13/12/2024 SE275923.027	TP14 SOIL 0.7-0.8 13/12/2024 SE275923.028	TP15 SOIL 0.4-0.5 13/12/2024 SE275923.029	TP15 SOIL 1.1-1.3 13/12/2024 SE275923.030
Conductivity (1:2) @25 C*	µS/cm	1	330	960	350	110	230
Resistivity (1:2)*	ohm cm	-	3100	1000	2900	9100	4300

PARAMETER	UOM	LOR	TP16 SOIL 0.6-0.7 13/12/2024 SE275923.031	TP16 SOIL 1.3-1.4 13/12/2024 SE275923.032	TP17 SOIL 0.2-0.4 13/12/2024 SE275923.033	TP18 SOIL 0.5-0.6 13/12/2024 SE275923.034	TP18 SOIL 1.7-1.8 13/12/2024 SE275923.035
Conductivity (1:2) @25 C*	µS/cm	1	260	280	96	220	900
Resistivity (1:2)*	ohm cm	-	3900	3600	10000	4500	1100

Conductivity (1:2) in soil [AN106] Tested: 19/12/2024 (continued)

PARAMETER	UOM	LOR	TP19 SOIL 0.5-0.6 13/12/2024 SE275923.036	TP20 SOIL 0.6-0.7 13/12/2024 SE275923.037	TP20 SOIL 1.9-2.1 13/12/2024 SE275923.038	TP21 SOIL 0.4-0.5 13/12/2024 SE275923.039	TP21 SOIL 1.4-1.5 13/12/2024 SE275923.040
Conductivity (1:2) @25 C*	µS/cm	1	130	770	1300	430	460
Resistivity (1:2)*	ohm cm	-	7600	1300	760	2300	2200

PARAMETER	UOM	LOR	TP22 SOIL 0.3-0.5 13/12/2024 SE275923.041	TP23 SOIL 0.5-0.6 13/12/2024 SE275923.042	TP24 SOIL 0.4-0.6 13/12/2024 SE275923.043	TP25 SOIL 0.4-0.6 13/12/2024 SE275923.044	TP25 SOIL 2.0-2.3 13/12/2024 SE275923.045
Conductivity (1:2) @25 C*	µS/cm	1	240	220	160	550	590
Resistivity (1:2)*	ohm cm	-	4100	4500	6200	1800	1700

PARAMETER	UOM	LOR	TP26 SOIL 0.5-0.6 13/12/2024 SE275923.046	TP26 SOIL 2.0-2.1 13/12/2024 SE275923.047	BH1 SOIL 0.5-1.0 13/12/2024 SE275923.048	BH1 SOIL 1.5-2.0 13/12/2024 SE275923.049	BH2 SOIL 0.5-1.0 13/12/2024 SE275923.050
Conductivity (1:2) @25 C*	µS/cm	1	220	1200	570	780	720
Resistivity (1:2)*	ohm cm	-	4500	810	1800	1300	1400

PARAMETER	UOM	LOR	BH2 SOIL 1.5-2.0 13/12/2024 SE275923.051	BH3 SOIL 0.5-1.0 13/12/2024 SE275923.052	BH3 SOIL 3.0-3.5 13/12/2024 SE275923.053	BH4 SOIL 0.5-1.0 13/12/2024 SE275923.054	BH4 SOIL 2.5-3.0 13/12/2024 SE275923.055
Conductivity (1:2) @25 C*	µS/cm	1	580	2000	1900	270	710
Resistivity (1:2)*	ohm cm	-	1700	510	540	3700	1400

PARAMETER	UOM	LOR	BH5 SOIL 0.4-0.6 13/12/2024 SE275923.056	BH6 SOIL 0.5-0.95 13/12/2024 SE275923.057	BH6 SOIL 2.5-2.6 13/12/2024 SE275923.058	BH7 SOIL 0.4-0.5 13/12/2024 SE275923.059	BH7 SOIL 1.5-1.85 13/12/2024 SE275923.060
Conductivity (1:2) @25 C*	µS/cm	1	200	190	95	69	75
Resistivity (1:2)*	ohm cm	-	5000	5200	11000	14000	13000

PARAMETER	UOM	LOR	BH8 SOIL 0.5-1.0 13/12/2024 SE275923.061
Conductivity (1:2) @25 C*	µS/cm	1	89
Resistivity (1:2)*	ohm cm	-	11000

Moisture Content [AN002] Tested: 18/12/2024

PARAMETER	UOM	LOR	TP1 SOIL 0.4-0.5 13/12/2024 SE275923.001	TP1 SOIL 1.5-1.7 13/12/2024 SE275923.002	TP2 SOIL 0.4-0.6 13/12/2024 SE275923.003	TP2 SOIL 1.8-2.0 13/12/2024 SE275923.004	TP3 SOIL 0.4-0.6 13/12/2024 SE275923.005
% Moisture	%w/w	1	21.5	16.2	16.7	13.0	20.8

PARAMETER	UOM	LOR	TP3 SOIL 1.8-2.0 13/12/2024 SE275923.006	TP4 SOIL 0.5-0.7 13/12/2024 SE275923.007	TP4 SOIL 1.7-1.9 13/12/2024 SE275923.008	TP5 SOIL 0.3-0.5 13/12/2024 SE275923.009	TP5 SOIL 0.9-1.0 13/12/2024 SE275923.010
% Moisture	%w/w	1	16.8	20.2	19.1	19.7	11.6

PARAMETER	UOM	LOR	TP6 SOIL 0.5-0.7 13/12/2024 SE275923.011	TP6 SOIL 2.0-2.2 13/12/2024 SE275923.012	TP7 SOIL 0.5-0.7 13/12/2024 SE275923.013	TP7 SOIL 1.8-2.0 13/12/2024 SE275923.014	TP8 SOIL 0.5-0.6 13/12/2024 SE275923.015
% Moisture	%w/w	1	19.1	13.9	17.1	19.8	16.8

PARAMETER	UOM	LOR	TP8 SOIL 1.4-1.5 13/12/2024 SE275923.016	TP9 SOIL 0.5-0.6 13/12/2024 SE275923.017	TP9 SOIL 1.8-2.0 13/12/2024 SE275923.018	TP10 SOIL 0.5-0.7 13/12/2024 SE275923.019	TP10 SOIL 1.4-1.5 13/12/2024 SE275923.020
% Moisture	%w/w	1	11.2	15.4	13.2	11.1	19.1

PARAMETER	UOM	LOR	TP11 SOIL 0.3-0.5 13/12/2024 SE275923.021	TP11 SOIL 1.2-1.4 13/12/2024 SE275923.022	TP12 SOIL 0.4-0.5 13/12/2024 SE275923.023	TP12 SOIL 0.8-1.0 13/12/2024 SE275923.024	TP13 SOIL 0.4-0.6 13/12/2024 SE275923.025
% Moisture	%w/w	1	19.0	14.4	19.0	10.9	15.9

PARAMETER	UOM	LOR	TP13 SOIL 1.3-1.5 13/12/2024 SE275923.026	TP14 SOIL 0.2-0.4 13/12/2024 SE275923.027	TP14 SOIL 0.7-0.8 13/12/2024 SE275923.028	TP15 SOIL 0.4-0.5 13/12/2024 SE275923.029	TP15 SOIL 1.1-1.3 13/12/2024 SE275923.030
% Moisture	%w/w	1	12.2	20.3	16.6	18.6	15.9

PARAMETER	UOM	LOR	TP16 SOIL 0.6-0.7 13/12/2024 SE275923.031	TP16 SOIL 1.3-1.4 13/12/2024 SE275923.032	TP17 SOIL 0.2-0.4 13/12/2024 SE275923.033	TP18 SOIL 0.5-0.6 13/12/2024 SE275923.034	TP18 SOIL 1.7-1.8 13/12/2024 SE275923.035
% Moisture	%w/w	1	22.5	19.8	9.3	15.7	13.1

Moisture Content [AN002] Tested: 18/12/2024 (continued)

PARAMETER	UOM	LOR	TP19 SOIL 0.5-0.6 13/12/2024 SE275923.036	TP20 SOIL 0.6-0.7 13/12/2024 SE275923.037	TP20 SOIL 1.9-2.1 13/12/2024 SE275923.038	TP21 SOIL 0.4-0.5 13/12/2024 SE275923.039	TP21 SOIL 1.4-1.5 13/12/2024 SE275923.040
% Moisture	%w/w	1	18.4	15.5	16.5	22.9	20.3

PARAMETER	UOM	LOR	TP22 SOIL 0.3-0.5 13/12/2024 SE275923.041	TP23 SOIL 0.5-0.6 13/12/2024 SE275923.042	TP24 SOIL 0.4-0.6 13/12/2024 SE275923.043	TP25 SOIL 0.4-0.6 13/12/2024 SE275923.044	TP25 SOIL 2.0-2.3 13/12/2024 SE275923.045
% Moisture	%w/w	1	13.5	15.3	18.7	14.1	17.6

PARAMETER	UOM	LOR	TP26 SOIL 0.5-0.6 13/12/2024 SE275923.046	TP26 SOIL 2.0-2.1 13/12/2024 SE275923.047	BH1 SOIL 0.5-1.0 13/12/2024 SE275923.048	BH1 SOIL 1.5-2.0 13/12/2024 SE275923.049	BH2 SOIL 0.5-1.0 13/12/2024 SE275923.050
% Moisture	%w/w	1	14.8	17.6	16.8	18.7	15.9

PARAMETER	UOM	LOR	BH2 SOIL 1.5-2.0 13/12/2024 SE275923.051	BH3 SOIL 0.5-1.0 13/12/2024 SE275923.052	BH3 SOIL 3.0-3.5 13/12/2024 SE275923.053	BH4 SOIL 0.5-1.0 13/12/2024 SE275923.054	BH4 SOIL 2.5-3.0 13/12/2024 SE275923.055
% Moisture	%w/w	1	11.5	19.9	12.7	8.7	14.0

PARAMETER	UOM	LOR	BH5 SOIL 0.4-0.6 13/12/2024 SE275923.056	BH6 SOIL 0.5-0.95 13/12/2024 SE275923.057	BH6 SOIL 2.5-2.6 13/12/2024 SE275923.058	BH7 SOIL 0.4-0.5 13/12/2024 SE275923.059	BH7 SOIL 1.5-1.85 13/12/2024 SE275923.060
% Moisture	%w/w	1	8.5	13.0	8.6	10.2	9.6

PARAMETER	UOM	LOR	BH8 SOIL 0.5-1.0 13/12/2024 SE275923.061
% Moisture	%w/w	1	10.3

Soluble Anions in Soil from 1:2 DI Extract by Ion Chromatography [AN245] Tested: 20/12/2024

PARAMETER	UOM	LOR	TP1 SOIL 0.4-0.5 13/12/2024 SE275923.001	TP1 SOIL 1.5-1.7 13/12/2024 SE275923.002	TP2 SOIL 0.4-0.6 13/12/2024 SE275923.003	TP2 SOIL 1.8-2.0 13/12/2024 SE275923.004	TP3 SOIL 0.4-0.6 13/12/2024 SE275923.005
Chloride	mg/kg	0.25	270	330	310	660	44
Sulfate	mg/kg	0.5	180	36	280	190	180

PARAMETER	UOM	LOR	TP3 SOIL 1.8-2.0 13/12/2024 SE275923.006	TP4 SOIL 0.5-0.7 13/12/2024 SE275923.007	TP4 SOIL 1.7-1.9 13/12/2024 SE275923.008	TP5 SOIL 0.3-0.5 13/12/2024 SE275923.009	TP5 SOIL 0.9-1.0 13/12/2024 SE275923.010
Chloride	mg/kg	0.25	310	1300	1300	14	9.8
Sulfate	mg/kg	0.5	74	250	290	140	170

PARAMETER	UOM	LOR	TP6 SOIL 0.5-0.7 13/12/2024 SE275923.011	TP6 SOIL 2.0-2.2 13/12/2024 SE275923.012	TP7 SOIL 0.5-0.7 13/12/2024 SE275923.013	TP7 SOIL 1.8-2.0 13/12/2024 SE275923.014	TP8 SOIL 0.5-0.6 13/12/2024 SE275923.015
Chloride	mg/kg	0.25	1400	1200	400	1000	210
Sulfate	mg/kg	0.5	260	190	220	140	200

PARAMETER	UOM	LOR	TP8 SOIL 1.4-1.5 13/12/2024 SE275923.016	TP9 SOIL 0.5-0.6 13/12/2024 SE275923.017	TP9 SOIL 1.8-2.0 13/12/2024 SE275923.018	TP10 SOIL 0.5-0.7 13/12/2024 SE275923.019	TP10 SOIL 1.4-1.5 13/12/2024 SE275923.020
Chloride	mg/kg	0.25	460	69	560	110	300
Sulfate	mg/kg	0.5	230	150	130	130	300

PARAMETER	UOM	LOR	TP11 SOIL 0.3-0.5 13/12/2024 SE275923.021	TP11 SOIL 1.2-1.4 13/12/2024 SE275923.022	TP12 SOIL 0.4-0.5 13/12/2024 SE275923.023	TP12 SOIL 0.8-1.0 13/12/2024 SE275923.024	TP13 SOIL 0.4-0.6 13/12/2024 SE275923.025
Chloride	mg/kg	0.25	18	55	570	480	48
Sulfate	mg/kg	0.5	120	220	73	47	180

PARAMETER	UOM	LOR	TP13 SOIL 1.3-1.5 13/12/2024 SE275923.026	TP14 SOIL 0.2-0.4 13/12/2024 SE275923.027	TP14 SOIL 0.7-0.8 13/12/2024 SE275923.028	TP15 SOIL 0.4-0.5 13/12/2024 SE275923.029	TP15 SOIL 1.1-1.3 13/12/2024 SE275923.030
Chloride	mg/kg	0.25	200	800	240	16	120
Sulfate	mg/kg	0.5	12	15	16	73	36

PARAMETER	UOM	LOR	TP16 SOIL 0.6-0.7 13/12/2024 SE275923.031	TP16 SOIL 1.3-1.4 13/12/2024 SE275923.032	TP17 SOIL 0.2-0.4 13/12/2024 SE275923.033	TP18 SOIL 0.5-0.6 13/12/2024 SE275923.034	TP18 SOIL 1.7-1.8 13/12/2024 SE275923.035
Chloride	mg/kg	0.25	13	14	14	27	530
Sulfate	mg/kg	0.5	98	210	30	140	190

Soluble Anions in Soil from 1:2 DI Extract by Ion Chromatography [AN245] Tested: 20/12/2024 (continued)

PARAMETER	UOM	LOR	TP19 SOIL 0.5-0.6 13/12/2024 SE275923.036	TP20 SOIL 0.6-0.7 13/12/2024 SE275923.037	TP20 SOIL 1.9-2.1 13/12/2024 SE275923.038	TP21 SOIL 0.4-0.5 13/12/2024 SE275923.039	TP21 SOIL 1.4-1.5 13/12/2024 SE275923.040
Chloride	mg/kg	0.25	14	560	820	330	310
Sulfate	mg/kg	0.5	93	77	20	13	8.8

PARAMETER	UOM	LOR	TP22 SOIL 0.3-0.5 13/12/2024 SE275923.041	TP23 SOIL 0.5-0.6 13/12/2024 SE275923.042	TP24 SOIL 0.4-0.6 13/12/2024 SE275923.043	TP25 SOIL 0.4-0.6 13/12/2024 SE275923.044	TP25 SOIL 2.0-2.3 13/12/2024 SE275923.045
Chloride	mg/kg	0.25	37	34	90	440	450
Sulfate	mg/kg	0.5	43	40	11	39	3.9

PARAMETER	UOM	LOR	TP26 SOIL 0.5-0.6 13/12/2024 SE275923.046	TP26 SOIL 2.0-2.1 13/12/2024 SE275923.047	BH1 SOIL 0.5-1.0 13/12/2024 SE275923.048	BH1 SOIL 1.5-2.0 13/12/2024 SE275923.049	BH2 SOIL 0.5-1.0 13/12/2024 SE275923.050
Chloride	mg/kg	0.25	120	1100	290	310	350
Sulfate	mg/kg	0.5	17	13	240	220	220

PARAMETER	UOM	LOR	BH2 SOIL 1.5-2.0 13/12/2024 SE275923.051	BH3 SOIL 0.5-1.0 13/12/2024 SE275923.052	BH3 SOIL 3.0-3.5 13/12/2024 SE275923.053	BH4 SOIL 0.5-1.0 13/12/2024 SE275923.054	BH4 SOIL 2.5-3.0 13/12/2024 SE275923.055
Chloride	mg/kg	0.25	290	820	820	27	310
Sulfate	mg/kg	0.5	180	520	180	180	180

PARAMETER	UOM	LOR	BH5 SOIL 0.4-0.6 13/12/2024 SE275923.056	BH6 SOIL 0.5-0.95 13/12/2024 SE275923.057	BH6 SOIL 2.5-2.6 13/12/2024 SE275923.058	BH7 SOIL 0.4-0.5 13/12/2024 SE275923.059	BH7 SOIL 1.5-1.85 13/12/2024 SE275923.060
Chloride	mg/kg	0.25	75	150	22	12	21
Sulfate	mg/kg	0.5	51	3.1	48	40	13

PARAMETER	UOM	LOR	BH8 SOIL 0.5-1.0 13/12/2024 SE275923.061
Chloride	mg/kg	0.25	27
Sulfate	mg/kg	0.5	17

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 20/12/2024

PARAMETER	UOM	LOR	TP1 SOIL 0.4-0.5 13/12/2024 SE275923.001	TP1 SOIL 1.5-1.7 13/12/2024 SE275923.002	TP2 SOIL 0.4-0.6 13/12/2024 SE275923.003	TP3 SOIL 0.4-0.6 13/12/2024 SE275923.005	TP4 SOIL 0.5-0.7 13/12/2024 SE275923.007
Exchangeable Calcium, Ca	mg/kg	2	370	26	240	980	350
Exchangeable Calcium, Ca	meq/100g	0.01	1.8	0.13	1.2	4.9	1.8
Exchangeable Calcium Percentage*	%	0.1	19.4	1.4	9.7	36.8	8.8
Exchangeable Potassium, K	mg/kg	2	120	160	130	120	140
Exchangeable Potassium, K	meq/100g	0.01	0.30	0.42	0.34	0.31	0.36
Exchangeable Potassium Percentage*	%	0.1	3.2	4.4	2.7	2.3	1.8
Exchangeable Magnesium, Mg	mg/kg	2	490	660	920	760	1300
Exchangeable Magnesium, Mg	meq/100g	0.02	4.0	5.4	7.5	6.3	10
Exchangeable Magnesium Percentage*	%	0.1	42.7	56.3	60.5	46.8	52.4
Exchangeable Sodium, Na	mg/kg	2	750	840	780	430	1700
Exchangeable Sodium, Na	meq/100g	0.01	3.3	3.7	3.4	1.9	7.3
Exchangeable Sodium Percentage*	%	0.1	34.7	38.0	27.1	14.1	37.0
Cation Exchange Capacity	meq/100g	0.02	9.4	9.6	12	13	20

PARAMETER	UOM	LOR	TP4 SOIL 1.7-1.9 13/12/2024 SE275923.008	TP5 SOIL 0.9-1.0 13/12/2024 SE275923.010	TP6 SOIL 0.5-0.7 13/12/2024 SE275923.011	TP7 SOIL 0.5-0.7 13/12/2024 SE275923.013	TP8 SOIL 0.5-0.6 13/12/2024 SE275923.015
Exchangeable Calcium, Ca	mg/kg	2	39	180	430	320	990
Exchangeable Calcium, Ca	meq/100g	0.01	0.20	0.89	2.1	1.6	5.0
Exchangeable Calcium Percentage*	%	0.1	1.1	11.5	11.1	10.4	20.0
Exchangeable Potassium, K	mg/kg	2	120	110	220	80	140
Exchangeable Potassium, K	meq/100g	0.01	0.30	0.29	0.55	0.20	0.35
Exchangeable Potassium Percentage*	%	0.1	1.7	3.8	2.9	1.3	1.4
Exchangeable Magnesium, Mg	mg/kg	2	1100	610	1200	1200	1900
Exchangeable Magnesium, Mg	meq/100g	0.02	9.4	5.0	9.8	9.7	16
Exchangeable Magnesium Percentage*	%	0.1	53.5	65.2	50.7	62.5	62.5
Exchangeable Sodium, Na	mg/kg	2	1800	350	1600	920	920
Exchangeable Sodium, Na	meq/100g	0.01	7.6	1.5	6.8	4.0	4.0
Exchangeable Sodium Percentage*	%	0.1	43.6	19.5	35.4	25.8	16.1
Cation Exchange Capacity	meq/100g	0.02	17	7.7	19	16	25

PARAMETER	UOM	LOR	TP8 SOIL 1.4-1.5 13/12/2024 SE275923.016	TP9 SOIL 0.5-0.6 13/12/2024 SE275923.017	TP10 SOIL 0.5-0.7 13/12/2024 SE275923.019	TP11 SOIL 1.2-1.4 13/12/2024 SE275923.022	TP12 SOIL 0.4-0.5 13/12/2024 SE275923.023
Exchangeable Calcium, Ca	mg/kg	2	220	110	220	47	220
Exchangeable Calcium, Ca	meq/100g	0.01	1.1	0.53	1.1	0.23	1.1
Exchangeable Calcium Percentage*	%	0.1	8.9	5.2	22.9	2.0	7.3
Exchangeable Potassium, K	mg/kg	2	120	160	390	310	100
Exchangeable Potassium, K	meq/100g	0.01	0.30	0.40	1.0	0.78	0.27
Exchangeable Potassium Percentage*	%	0.1	2.4	3.9	20.8	6.6	1.8
Exchangeable Magnesium, Mg	mg/kg	2	890	840	230	860	1100
Exchangeable Magnesium, Mg	meq/100g	0.02	7.3	6.9	1.9	7.1	8.8
Exchangeable Magnesium Percentage*	%	0.1	59.5	66.7	39.9	59.9	59.5
Exchangeable Sodium, Na	mg/kg	2	820	570	180	860	1100
Exchangeable Sodium, Na	meq/100g	0.01	3.6	2.5	0.79	3.7	4.6
Exchangeable Sodium Percentage*	%	0.1	29.2	24.3	16.4	31.4	31.4
Cation Exchange Capacity	meq/100g	0.02	12	10	4.8	12	15

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 20/12/2024 (continued)

PARAMETER	UOM	LOR	TP13 SOIL 0.4-0.6 13/12/2024 SE275923.025	TP14 SOIL 0.7-0.8 13/12/2024 SE275923.028	TP15 SOIL 0.4-0.5 13/12/2024 SE275923.029	TP15 SOIL 1.1-1.3 13/12/2024 SE275923.030	TP16 SOIL 0.6-0.7 13/12/2024 SE275923.031
Exchangeable Calcium, Ca	mg/kg	2	320	68	410	13	1600
Exchangeable Calcium, Ca	meq/100g	0.01	1.6	0.34	2.0	0.07	7.8
Exchangeable Calcium Percentage*	%	0.1	20.8	4.6	28.0	1.1	41.8
Exchangeable Potassium, K	mg/kg	2	130	110	84	99	740
Exchangeable Potassium, K	meq/100g	0.01	0.32	0.27	0.22	0.25	1.9
Exchangeable Potassium Percentage*	%	0.1	4.1	3.6	3.0	4.5	10.2
Exchangeable Magnesium, Mg	mg/kg	2	470	570	510	420	1000
Exchangeable Magnesium, Mg	meq/100g	0.02	3.9	4.7	4.2	3.4	8.2
Exchangeable Magnesium Percentage*	%	0.1	49.4	62.7	57.7	60.5	43.9
Exchangeable Sodium, Na	mg/kg	2	460	500	190	440	180
Exchangeable Sodium, Na	meq/100g	0.01	2.0	2.2	0.82	1.9	0.79
Exchangeable Sodium Percentage*	%	0.1	25.7	29.2	11.3	33.9	4.2
Cation Exchange Capacity	meq/100g	0.02	7.8	7.5	7.3	5.7	19

PARAMETER	UOM	LOR	TP16 SOIL 1.3-1.4 13/12/2024 SE275923.032	TP17 SOIL 0.2-0.4 13/12/2024 SE275923.033	TP18 SOIL 0.5-0.6 13/12/2024 SE275923.034	TP19 SOIL 0.5-0.6 13/12/2024 SE275923.036	TP20 SOIL 0.6-0.7 13/12/2024 SE275923.037
Exchangeable Calcium, Ca	mg/kg	2	540	730	380	510	280
Exchangeable Calcium, Ca	meq/100g	0.01	2.7	3.7	1.9	2.5	1.4
Exchangeable Calcium Percentage*	%	0.1	25.8	53.1	16.5	23.5	12.0
Exchangeable Potassium, K	mg/kg	2	530	200	75	55	130
Exchangeable Potassium, K	meq/100g	0.01	1.4	0.50	0.19	0.14	0.34
Exchangeable Potassium Percentage*	%	0.1	12.9	7.3	1.7	1.3	3.0
Exchangeable Magnesium, Mg	mg/kg	2	700	300	900	820	780
Exchangeable Magnesium, Mg	meq/100g	0.02	5.8	2.5	7.4	6.8	6.4
Exchangeable Magnesium Percentage*	%	0.1	54.4	35.6	64.6	62.8	55.6
Exchangeable Sodium, Na	mg/kg	2	170	64	450	310	770
Exchangeable Sodium, Na	meq/100g	0.01	0.73	0.28	2.0	1.3	3.4
Exchangeable Sodium Percentage*	%	0.1	6.9	4.0	17.2	12.4	29.3
Cation Exchange Capacity	meq/100g	0.02	11	6.9	11	11	11

PARAMETER	UOM	LOR	TP21 SOIL 0.4-0.5 13/12/2024 SE275923.039	TP21 SOIL 1.4-1.5 13/12/2024 SE275923.040	TP22 SOIL 0.3-0.5 13/12/2024 SE275923.041	TP23 SOIL 0.5-0.6 13/12/2024 SE275923.042	TP24 SOIL 0.4-0.6 13/12/2024 SE275923.043
Exchangeable Calcium, Ca	mg/kg	2	170	14	530	110	110
Exchangeable Calcium, Ca	meq/100g	0.01	0.85	0.07	2.6	0.57	0.57
Exchangeable Calcium Percentage*	%	0.1	8.4	0.7	29.0	6.2	10.4
Exchangeable Potassium, K	mg/kg	2	80	99	110	130	180
Exchangeable Potassium, K	meq/100g	0.01	0.21	0.25	0.29	0.33	0.47
Exchangeable Potassium Percentage*	%	0.1	2.0	2.5	3.2	3.6	8.6
Exchangeable Magnesium, Mg	mg/kg	2	730	820	530	720	480
Exchangeable Magnesium, Mg	meq/100g	0.02	6.0	6.7	4.3	5.9	4.0
Exchangeable Magnesium Percentage*	%	0.1	59.1	66.2	47.5	64.6	72.2
Exchangeable Sodium, Na	mg/kg	2	710	720	420	540	110
Exchangeable Sodium, Na	meq/100g	0.01	3.1	3.1	1.8	2.4	0.48
Exchangeable Sodium Percentage*	%	0.1	30.4	30.6	20.3	25.6	8.8
Cation Exchange Capacity	meq/100g	0.02	10	10	9.1	9.2	5.5

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 20/12/2024 (continued)

PARAMETER	UOM	LOR	TP25 SOIL 0.4-0.6 13/12/2024 SE275923.044	TP26 SOIL 0.5-0.6 13/12/2024 SE275923.046	BH1 SOIL 0.5-1.0 13/12/2024 SE275923.048	BH2 SOIL 0.5-1.0 13/12/2024 SE275923.050	BH3 SOIL 0.5-1.0 13/12/2024 SE275923.052
Exchangeable Calcium, Ca	mg/kg	2	57	160	120	48	160
Exchangeable Calcium, Ca	meq/100g	0.01	0.28	0.80	0.59	0.24	0.82
Exchangeable Calcium Percentage*	%	0.1	4.2	8.6	6.8	2.2	3.5
Exchangeable Potassium, K	mg/kg	2	54	38	55	200	210
Exchangeable Potassium, K	meq/100g	0.01	0.14	0.10	0.14	0.52	0.53
Exchangeable Potassium Percentage*	%	0.1	2.0	1.0	1.6	4.8	2.2
Exchangeable Magnesium, Mg	mg/kg	2	520	850	570	680	1600
Exchangeable Magnesium, Mg	meq/100g	0.02	4.3	7.0	4.6	5.6	13
Exchangeable Magnesium Percentage*	%	0.1	63.3	75.6	53.8	52.3	55.7
Exchangeable Sodium, Na	mg/kg	2	470	310	750	1000	2100
Exchangeable Sodium, Na	meq/100g	0.01	2.1	1.4	3.3	4.4	9.1
Exchangeable Sodium Percentage*	%	0.1	30.5	14.7	37.8	40.6	38.6
Cation Exchange Capacity	meq/100g	0.02	6.7	9.2	8.6	11	24

PARAMETER	UOM	LOR	BH4 SOIL 0.5-1.0 13/12/2024 SE275923.054	BH5 SOIL 0.4-0.6 13/12/2024 SE275923.056	BH6 SOIL 0.5-0.95 13/12/2024 SE275923.057	BH7 SOIL 0.4-0.5 13/12/2024 SE275923.059	BH8 SOIL 0.5-1.0 13/12/2024 SE275923.061
Exchangeable Calcium, Ca	mg/kg	2	460	160	14	320	78
Exchangeable Calcium, Ca	meq/100g	0.01	2.3	0.80	0.07	1.6	0.39
Exchangeable Calcium Percentage*	%	0.1	27.9	14.2	1.3	28.3	9.0
Exchangeable Potassium, K	mg/kg	2	250	130	74	110	110
Exchangeable Potassium, K	meq/100g	0.01	0.63	0.33	0.19	0.27	0.28
Exchangeable Potassium Percentage*	%	0.1	7.8	5.8	3.6	4.9	6.4
Exchangeable Magnesium, Mg	mg/kg	2	490	380	460	380	350
Exchangeable Magnesium, Mg	meq/100g	0.02	4.0	3.1	3.7	3.1	2.9
Exchangeable Magnesium Percentage*	%	0.1	49.4	55.1	71.8	56.1	66.3
Exchangeable Sodium, Na	mg/kg	2	280	320	280	140	180
Exchangeable Sodium, Na	meq/100g	0.01	1.2	1.4	1.2	0.59	0.79
Exchangeable Sodium Percentage*	%	0.1	15.0	24.9	23.3	10.6	18.3
Cation Exchange Capacity	meq/100g	0.02	8.2	5.6	5.2	5.6	4.3

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode and is calibrated against 3 buffers purchased commercially. For soils, an extract with water is made at a ratio of 1:2 and the pH determined and reported on the extract after 1 hour extraction (pH 1:2) or after 1 hour extraction and overnight aging (pH (1:2) aged). Reference APHA 4500-H+.
AN106	Conductivity and TDS by Calculation: Conductivity is measured by meter with temperature compensation and is calibrated against a standard solution of potassium chloride. Conductivity is generally reported as µmhos /cm or µS/cm @ 25°C. For soils, an extract of as received sample with water is made at a ratio of 1:5 and the EC determined and reported on the extract, or calculated back to the as-received sample. Salinity can be estimated from conductivity using a conversion factor, which for natural waters, is in the range 0.55 to 0.75. Reference APHA 2510 B.
AN106	Resistivity of the extract is reported on the extract basis and is the reciprocal of conductivity. Salinity and TDS can be calculated from the extract conductivity and is reported back to the soil basis.
AN122	Exchangeable Cations, CEC and ESP: Soil sample is extracted in 1M Ammonium Acetate at pH=7 (or 1M Ammonium Chloride at pH=7) with cations (Na, K, Ca & Mg) then determined by ICP OES/ICP MS and reported as Exchangeable Cations. For saline soils, these results can be corrected for water soluble cations and reported as Exchangeable cations in meq/100g or soil can be pre-treated (aqueous ethanol/aqueous glycerol) prior to extraction. Cation Exchange Capacity (CEC) is the sum of the exchangeable cations in meq/100g.
AN122	The Exchangeable Sodium Percentage (ESP) is calculated as the exchangeable sodium divided by the CEC (all in meq/100g) times 100. ESP can be used to categorise the sodicity of the soil as below: ESP < 6% non-sodic ESP 6-15% sodic ESP >15% strongly sodic Method is referenced to Rayment and Lyons, 2011, sections 15D3 and 15N1.-
AN245	Anions by Ion Chromatography: A water sample or extract is injected into an eluent stream that passes through the ion chromatographic system where the anions of interest ie Br, Cl, NO2, NO3 and SO4 are separated on their relative affinities for the active sites on the column packing material. Changes to the conductivity and the UV-visible absorbance of the eluent enable identification and quantitation of the anions based on their retention time and peak height or area. APHA 4110 B

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
***	Indicates that both * and ** apply.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

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STATEMENT OF QA/QC PERFORMANCE

SE275923 R0

CLIENT DETAILS

Contact	Indra Jworchan
Client	Geotech Testing Pty Ltd
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	indra.jworchan@geotech.com.au
Project	**20600/2 393 Terrace Road, North Richmond**
Order Number	**20600/2**
Samples	61

LABORATORY DETAILS

Manager	Shane McDermott
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE275923 R0**
Date Received	16 Dec 2024
Date Reported	23 Dec 2024

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met (within the SGS Alexandria Environmental laboratory).

SAMPLE SUMMARY

Sample counts by matrix	61 Soil	Type of documentation received	COC
Date documentation received	16/12/2024	Samples received in good order	Yes
Samples received without headspace	N/A	Sample temperature upon receipt	26.3°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	None	Samples clearly labelled	Yes
Complete documentation received	Yes	Number of eskies/boxes received	

HOLDING TIME SUMMARY

SE275923 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Conductivity (1:2) in soil — **Method: ME-(AU)-[ENV]AN106**

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1	SE275923.001	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP1	SE275923.002	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP2	SE275923.003	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP2	SE275923.004	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP3	SE275923.005	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP3	SE275923.006	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP4	SE275923.007	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP4	SE275923.008	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP5	SE275923.009	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP5	SE275923.010	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP6	SE275923.011	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP6	SE275923.012	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP7	SE275923.013	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP7	SE275923.014	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP8	SE275923.015	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP8	SE275923.016	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP9	SE275923.017	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP9	SE275923.018	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP10	SE275923.019	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP10	SE275923.020	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP11	SE275923.021	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP11	SE275923.022	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP12	SE275923.023	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP12	SE275923.024	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP13	SE275923.025	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP13	SE275923.026	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP14	SE275923.027	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP14	SE275923.028	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP15	SE275923.029	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP15	SE275923.030	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP16	SE275923.031	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP16	SE275923.032	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP17	SE275923.033	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP18	SE275923.034	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP18	SE275923.035	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP19	SE275923.036	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP20	SE275923.037	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP20	SE275923.038	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP21	SE275923.039	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP21	SE275923.040	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP22	SE275923.041	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP23	SE275923.042	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP24	SE275923.043	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP25	SE275923.044	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP25	SE275923.045	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP26	SE275923.046	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP26	SE275923.047	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH1	SE275923.048	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH1	SE275923.049	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH2	SE275923.050	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH2	SE275923.051	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH3	SE275923.052	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH3	SE275923.053	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH4	SE275923.054	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH4	SE275923.055	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH5	SE275923.056	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH6	SE275923.057	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH6	SE275923.058	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH7	SE275923.059	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH7	SE275923.060	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024

HOLDING TIME SUMMARY

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SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Conductivity (1:2) in soil (continued)

Method: ME-(AU)-[ENV]AN106

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH8	SE275923.061	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024

Conductivity and TDS by Calculation - Soil

Method: ME-(AU)-[ENV]AN106

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1	SE275923.001	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP1	SE275923.002	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP2	SE275923.003	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP2	SE275923.004	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP3	SE275923.005	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP3	SE275923.006	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP4	SE275923.007	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP4	SE275923.008	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP5	SE275923.009	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP5	SE275923.010	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP6	SE275923.011	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP6	SE275923.012	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP7	SE275923.013	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP7	SE275923.014	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP8	SE275923.015	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP8	SE275923.016	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP9	SE275923.017	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP9	SE275923.018	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP10	SE275923.019	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP10	SE275923.020	LB333953	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP11	SE275923.021	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP11	SE275923.022	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP12	SE275923.023	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP12	SE275923.024	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP13	SE275923.025	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP13	SE275923.026	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP14	SE275923.027	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP14	SE275923.028	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP15	SE275923.029	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP15	SE275923.030	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP16	SE275923.031	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP16	SE275923.032	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP17	SE275923.033	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP18	SE275923.034	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP18	SE275923.035	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP19	SE275923.036	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP20	SE275923.037	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP20	SE275923.038	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP21	SE275923.039	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP21	SE275923.040	LB333958	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP22	SE275923.041	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP23	SE275923.042	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP24	SE275923.043	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP25	SE275923.044	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP25	SE275923.045	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP26	SE275923.046	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
TP26	SE275923.047	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH1	SE275923.048	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH1	SE275923.049	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH2	SE275923.050	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH2	SE275923.051	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH3	SE275923.052	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH3	SE275923.053	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH4	SE275923.054	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH4	SE275923.055	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH5	SE275923.056	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024

HOLDING TIME SUMMARY

SE275923 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Conductivity and TDS by Calculation - Soil (continued)

Method: ME-(AU)-[ENV]AN106

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH6	SE275923.057	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH6	SE275923.058	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH7	SE275923.059	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH7	SE275923.060	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024
BH8	SE275923.061	LB334072	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024	20 Dec 2024

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR)

Method: ME-(AU)-[ENV]AN122

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1	SE275923.001	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP1	SE275923.002	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP2	SE275923.003	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP3	SE275923.005	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP4	SE275923.007	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP4	SE275923.008	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP5	SE275923.010	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP6	SE275923.011	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP7	SE275923.013	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP8	SE275923.015	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP8	SE275923.016	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP9	SE275923.017	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP10	SE275923.019	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP11	SE275923.022	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP12	SE275923.023	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP13	SE275923.025	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP14	SE275923.028	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP15	SE275923.029	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP15	SE275923.030	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP16	SE275923.031	LB334045	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP16	SE275923.032	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP17	SE275923.033	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP18	SE275923.034	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP19	SE275923.036	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP20	SE275923.037	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP21	SE275923.039	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP21	SE275923.040	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP22	SE275923.041	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP23	SE275923.042	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP24	SE275923.043	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP25	SE275923.044	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
TP26	SE275923.046	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
BH1	SE275923.048	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
BH2	SE275923.050	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
BH3	SE275923.052	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
BH4	SE275923.054	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
BH5	SE275923.056	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
BH6	SE275923.057	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
BH7	SE275923.059	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024
BH8	SE275923.061	LB334047	13 Dec 2024	16 Dec 2024	10 Jan 2025	20 Dec 2024	10 Jan 2025	23 Dec 2024

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1	SE275923.001	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP1	SE275923.002	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP2	SE275923.003	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP2	SE275923.004	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP3	SE275923.005	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP3	SE275923.006	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP4	SE275923.007	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP4	SE275923.008	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP5	SE275923.009	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP5	SE275923.010	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024

HOLDING TIME SUMMARY

SE275923 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Moisture Content (continued)

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP6	SE275923.011	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP6	SE275923.012	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP7	SE275923.013	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP7	SE275923.014	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP8	SE275923.015	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP8	SE275923.016	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP9	SE275923.017	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP9	SE275923.018	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP10	SE275923.019	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP10	SE275923.020	LB333794	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP11	SE275923.021	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP11	SE275923.022	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP12	SE275923.023	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP12	SE275923.024	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP13	SE275923.025	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP13	SE275923.026	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP14	SE275923.027	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP14	SE275923.028	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP15	SE275923.029	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP15	SE275923.030	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP16	SE275923.031	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP16	SE275923.032	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP17	SE275923.033	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP18	SE275923.034	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP18	SE275923.035	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP19	SE275923.036	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP20	SE275923.037	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP20	SE275923.038	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP21	SE275923.039	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP21	SE275923.040	LB333830	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP22	SE275923.041	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP23	SE275923.042	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP24	SE275923.043	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP25	SE275923.044	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP25	SE275923.045	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP26	SE275923.046	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
TP26	SE275923.047	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
BH1	SE275923.048	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
BH1	SE275923.049	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
BH2	SE275923.050	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
BH2	SE275923.051	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
BH3	SE275923.052	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
BH3	SE275923.053	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
BH4	SE275923.054	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
BH4	SE275923.055	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
BH5	SE275923.056	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
BH6	SE275923.057	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
BH6	SE275923.058	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
BH7	SE275923.059	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
BH7	SE275923.060	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024
BH8	SE275923.061	LB333831	13 Dec 2024	16 Dec 2024	27 Dec 2024	18 Dec 2024	23 Dec 2024	20 Dec 2024

pH in soil (1:2)

Method: ME-(AU)-[ENV]AN101

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1	SE275923.001	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP1	SE275923.002	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP2	SE275923.003	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP2	SE275923.004	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP3	SE275923.005	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP3	SE275923.006	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024

HOLDING TIME SUMMARY

SE275923 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

pH in soil (1:2) (continued) — **Method: ME-(AU)-[ENV]AN101**

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP4	SE275923.007	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP4	SE275923.008	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP5	SE275923.009	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP5	SE275923.010	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP6	SE275923.011	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP6	SE275923.012	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP7	SE275923.013	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP7	SE275923.014	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP8	SE275923.015	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP8	SE275923.016	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP9	SE275923.017	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP9	SE275923.018	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP10	SE275923.019	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP10	SE275923.020	LB333954	13 Dec 2024	16 Dec 2024	20 Dec 2024	19 Dec 2024	20 Dec 2024	20 Dec 2024
TP11	SE275923.021	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP11	SE275923.022	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP12	SE275923.023	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP12	SE275923.024	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP13	SE275923.025	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP13	SE275923.026	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP14	SE275923.027	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP14	SE275923.028	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP15	SE275923.029	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP15	SE275923.030	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP16	SE275923.031	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP16	SE275923.032	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP17	SE275923.033	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP18	SE275923.034	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP18	SE275923.035	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP19	SE275923.036	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP20	SE275923.037	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP20	SE275923.038	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP21	SE275923.039	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP21	SE275923.040	LB334062	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP22	SE275923.041	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP23	SE275923.042	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP24	SE275923.043	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP25	SE275923.044	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP25	SE275923.045	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP26	SE275923.046	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
TP26	SE275923.047	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
BH1	SE275923.048	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
BH1	SE275923.049	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
BH2	SE275923.050	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
BH2	SE275923.051	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
BH3	SE275923.052	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
BH3	SE275923.053	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
BH4	SE275923.054	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
BH4	SE275923.055	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
BH5	SE275923.056	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
BH6	SE275923.057	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
BH6	SE275923.058	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
BH7	SE275923.059	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
BH7	SE275923.060	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024
BH8	SE275923.061	LB334064	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	21 Dec 2024	20 Dec 2024

Soluble Anions in Soil from 1:2 DI Extract by Ion Chromatography — **Method: ME-(AU)-[ENV]AN245**

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1	SE275923.001	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP1	SE275923.002	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024

HOLDING TIME SUMMARY

SE275923 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Soluble Anions in Soil from 1:2 DI Extract by Ion Chromatography (continued) — **Method: ME-(AU)-[ENV]AN245**

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP2	SE275923.003	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP2	SE275923.004	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP3	SE275923.005	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP3	SE275923.006	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP4	SE275923.007	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP4	SE275923.008	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP5	SE275923.009	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP5	SE275923.010	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP6	SE275923.011	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP6	SE275923.012	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP7	SE275923.013	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP7	SE275923.014	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP8	SE275923.015	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP8	SE275923.016	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP9	SE275923.017	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP9	SE275923.018	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP10	SE275923.019	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP10	SE275923.020	LB334065	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP11	SE275923.021	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP11	SE275923.022	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP12	SE275923.023	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP12	SE275923.024	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP13	SE275923.025	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP13	SE275923.026	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP14	SE275923.027	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP14	SE275923.028	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP15	SE275923.029	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP15	SE275923.030	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP16	SE275923.031	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP16	SE275923.032	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP17	SE275923.033	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP18	SE275923.034	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP18	SE275923.035	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP19	SE275923.036	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP20	SE275923.037	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP20	SE275923.038	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP21	SE275923.039	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP21	SE275923.040	LB334067	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP22	SE275923.041	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP23	SE275923.042	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP24	SE275923.043	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP25	SE275923.044	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP25	SE275923.045	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP26	SE275923.046	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
TP26	SE275923.047	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
BH1	SE275923.048	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
BH1	SE275923.049	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
BH2	SE275923.050	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
BH2	SE275923.051	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
BH3	SE275923.052	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
BH3	SE275923.053	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
BH4	SE275923.054	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
BH4	SE275923.055	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
BH5	SE275923.056	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
BH6	SE275923.057	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
BH6	SE275923.058	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
BH7	SE275923.059	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
BH7	SE275923.060	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024
BH8	SE275923.061	LB334068	13 Dec 2024	16 Dec 2024	20 Dec 2024	20 Dec 2024	17 Jan 2025	23 Dec 2024

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No surrogates were required for this job.

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Conductivity (1:2) in soil

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result
LB333954.001	Conductivity (1:2) @25 C*	µS/cm	1	<1
LB334062.001	Conductivity (1:2) @25 C*	µS/cm	1	<1
LB334064.001	Conductivity (1:2) @25 C*	µS/cm	1	<1
LB334064.026	Conductivity (1:2) @25 C*	µS/cm	1	<1

Conductivity and TDS by Calculation - Soil

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result
LB333953.001	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	0.71
LB333958.001	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	0.79
LB334072.001	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	0.44

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR)

Method: ME-(AU)-[ENV]AN122

Sample Number	Parameter	Units	LOR	Result
LB334045.001	Exchangeable Sodium, Na	mg/kg	2	0
	Exchangeable Potassium, K	mg/kg	2	0
	Exchangeable Calcium, Ca	mg/kg	2	0
	Exchangeable Magnesium, Mg	mg/kg	2	0
LB334047.001	Exchangeable Sodium, Na	mg/kg	2	0
	Exchangeable Potassium, K	mg/kg	2	0
	Exchangeable Calcium, Ca	mg/kg	2	0
	Exchangeable Magnesium, Mg	mg/kg	2	0

Soluble Anions in Soil from 1:2 DI Extract by Ion Chromatography

Method: ME-(AU)-[ENV]AN245

Sample Number	Parameter	Units	LOR	Result
LB334065.001	Chloride	mg/kg	0.25	<0.25
	Sulfate	mg/kg	0.5	<0.5
LB334067.001	Chloride	mg/kg	0.25	<0.25
	Sulfate	mg/kg	0.5	<0.5
LB334068.001	Chloride	mg/kg	0.25	<0.25
	Sulfate	mg/kg	0.5	<0.5

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Conductivity (1:2) in soil

Method: ME-(AU)-[ENV]AN106

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE275923.010	LB333954.014	Conductivity (1:2) @25 C*	µS/cm	1	220	210	31	2
		Resistivity (1:2)*	ohm cm	-	4600	4700	30	2
SE275923.020	LB333954.025	Conductivity (1:2) @25 C*	µS/cm	1	650	730	30	12
		Resistivity (1:2)*	ohm cm	-	1600	1400	31	12
SE275923.030	LB334062.014	Conductivity (1:2) @25 C*	µS/cm	1	230	200	31	16
		Resistivity (1:2)*	ohm cm	-	4300	5000	30	16
SE275923.040	LB334062.025	Conductivity (1:2) @25 C*	µS/cm	1	460	460	30	1
		Resistivity (1:2)*	ohm cm	-	2200	2200	30	1
SE275923.050	LB334064.014	Conductivity (1:2) @25 C*	µS/cm	1	720	730	30	1
		Resistivity (1:2)*	ohm cm	-	1400	1400	31	1
SE275923.060	LB334064.025	Conductivity (1:2) @25 C*	µS/cm	1	75	81	33	8
		Resistivity (1:2)*	ohm cm	-	13000	12000	30	8
SE275923.061	LB334064.030	Conductivity (1:2) @25 C*	µS/cm	1	89	90	32	1
		Resistivity (1:2)*	ohm cm	-	11000	11000	30	1

Conductivity and TDS by Calculation - Soil

Method: ME-(AU)-[ENV]AN106

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE275923.010	LB333953.014	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	130	36.604323094	31	4
SE275923.020	LB333953.025	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	520	16.744186046	30	0
SE275923.030	LB333958.014	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	78	03.728688524	32	28
SE275923.040	LB333958.025	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	230	54.724711907	31	11
SE275923.050	LB334072.014	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	490	66.299049265	30	29
SE275923.060	LB334072.025	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	24	22.2325609756	39	6
SE275923.061	LB334072.030	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	50	51.5223277909	34	2

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE275923.010	LB333794.011	% Moisture	%w/w	1	11.6	15.8	37	31
SE275923.020	LB333794.022	% Moisture	%w/w	1	19.1	18.8	35	1
SE275923.030	LB333830.011	% Moisture	%w/w	1	15.9	17.5	36	9
SE275923.040	LB333830.022	% Moisture	%w/w	1	20.3	21.4	35	5
SE275923.050	LB333831.011	% Moisture	%w/w	1	15.9	15.8	36	1
SE275923.060	LB333831.022	% Moisture	%w/w	1	9.6	9.3	41	3
SE275923.061	LB333831.024	% Moisture	%w/w	1	10.3	10.6	40	2

pH in soil (1:2)

Method: ME-(AU)-[ENV]AN101

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE275923.010	LB333954.014	pH (1:2)	pH Units	-	4.7	4.7	32	1
SE275923.020	LB333954.025	pH (1:2)	pH Units	-	4.2	4.3	32	2
SE275923.030	LB334062.014	pH (1:2)	pH Units	-	4.5	4.5	32	1
SE275923.040	LB334062.025	pH (1:2)	pH Units	-	4.5	4.6	32	1
SE275923.050	LB334064.014	pH (1:2)	pH Units	-	4.4	4.4	32	1
SE275923.060	LB334064.025	pH (1:2)	pH Units	-	5.2	5.1	32	2
SE275923.061	LB334064.030	pH (1:2)	pH Units	-	4.7	4.9	32	3

Soluble Anions in Soil from 1:2 DI Extract by Ion Chromatography

Method: ME-(AU)-[ENV]AN245

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE275923.010	LB334065.014	Chloride	mg/kg	0.25	9.8	9.0	33	9
		Sulfate	mg/kg	0.5	170	170	31	1
SE275923.020	LB334065.027	Chloride	mg/kg	0.25	300	340	30	13
		Sulfate	mg/kg	0.5	300	370	31	21
SE275923.030	LB334067.014	Chloride	mg/kg	0.25	120	97	30	23
		Sulfate	mg/kg	0.5	36	47	35	25
SE275923.040	LB334067.027	Chloride	mg/kg	0.25	310	310	30	1
		Sulfate	mg/kg	0.5	8.8	9.3	52	6
SE275923.050	LB334068.014	Chloride	mg/kg	0.25	350	350	30	2
		Sulfate	mg/kg	0.5	220	250	31	10
SE275923.060	LB334068.028	Chloride	mg/kg	0.25	21	25	31	19
		Sulfate	mg/kg	0.5	13	13	45	7
SE275923.061	LB334068.030	Chloride	mg/kg	0.25	27	26	31	6
		Sulfate	mg/kg	0.5	17	18	42	6

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Conductivity (1:2) in soil

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB333954.002	Conductivity (1:2) @25 C*	µS/cm	1	280	303	70 - 130	93
LB334062.002	Conductivity (1:2) @25 C*	µS/cm	1	300	303	70 - 130	99
LB334064.002	Conductivity (1:2) @25 C*	µS/cm	1	280	303	70 - 130	93
LB334064.028	Conductivity (1:2) @25 C*	µS/cm	1	290	303	70 - 130	97

Conductivity and TDS by Calculation - Soil

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB333953.002	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	NA	303	85 - 115	104
LB333958.002	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	NA	303	85 - 115	101
LB334072.002	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	NA	303	85 - 115	99

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR)

Method: ME-(AU)-[ENV]AN122

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB334045.002	Exchangeable Sodium, Na	meq/100g	0.01	0.17	0.188	80 - 120	92
	Exchangeable Potassium, K	meq/100g	0.01	0.13	0.141	80 - 120	96
	Exchangeable Calcium, Ca	meq/100g	0.01	2.1	2.17	80 - 120	96
	Exchangeable Magnesium, Mg	meq/100g	0.02	1.4	1.53	80 - 120	93
LB334047.002	Exchangeable Sodium, Na	meq/100g	0.01	0.17	0.188	80 - 120	91
	Exchangeable Potassium, K	meq/100g	0.01	0.13	0.141	80 - 120	95
	Exchangeable Calcium, Ca	meq/100g	0.01	2.1	2.17	80 - 120	96
	Exchangeable Magnesium, Mg	meq/100g	0.02	1.4	1.53	80 - 120	93

pH in soil (1:2)

Method: ME-(AU)-[ENV]AN101

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB333954.003	pH (1:2)	pH Units	-	7.5	7.415	98 - 102	101
LB334062.003	pH (1:2)	pH Units	-	7.4	7.415	98 - 102	100
LB334064.003	pH (1:2)	pH Units	-	7.4	7.415	98 - 102	100
LB334064.029	pH (1:2)	pH Units	-	7.4	7.415	98 - 102	100

Soluble Anions in Soil from 1:2 DI Extract by Ion Chromatography

Method: ME-(AU)-[ENV]AN245

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB334065.002	Chloride	mg/kg	0.25	41	40	70 - 130	102
	Sulfate	mg/kg	0.5	42	40	70 - 130	104
LB334067.002	Chloride	mg/kg	0.25	42	40	70 - 130	106
	Sulfate	mg/kg	0.5	43	40	70 - 130	108
LB334068.002	Chloride	mg/kg	0.25	42	40	70 - 130	104
	Sulfate	mg/kg	0.5	42	40	70 - 130	105

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spikes were required for this job.

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
***	Indicates that both * and ** apply.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.
①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to relevant report comments for further information.

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO: SGS ENVIRONMENTAL SERVICES
UNIT 16
33 MADDOX STREET
ALEXANDRIA NSW 2015

PH: 02 8594 0400 **FAX:** 02 8594 0499
ATTN: Ms Emily Yin

Sampling By: BJ/AN **Job No** 20600/2
Project: Proposed Master Planned Community
Project Manager: IJ/BJ **Location:** 393 Terrace Road, North Richmond

Sampling details

Results required by:

	Location	Depth	Soil	Water	EC (1:5)	Agressivity	ESP						Notes	Keep Sample
1	TP1	0.4-0.5	DSP		✓	✓	✓						Aggressivity Test = pH, Cl	✓
2		1.5-1.7	DSP		✓	✓	✓						SO4 and Resistivity	✓
3	TP2	0.4-0.6	DSP		✓	✓	✓							✓
4		1.8-2.0	DSP		✓	✓								✓
5	TP3	0.4-0.6	DSP		✓	✓	✓							✓
6		1.8-2.0	DSP		✓	✓							ESP=	✓
7	TP4	0.5-0.7	DSP		✓	✓	✓						Exchangeable sodium percentage	✓
8		1.7-1.9	DSP		✓	✓	✓							✓
9	TP5	0.3-0.5	DSP		✓	✓								✓
10		0.9-1.0	DSP		✓	✓	✓							✓
11	TP6	0.5-0.7	DSP		✓	✓	✓							✓
12		2.0-2.2	DSP		✓	✓								✓
13	TP7	0.5-0.7	DSP		✓	✓	✓							✓
14		1.8-2.0	DSP		✓	✓								✓
15	TP8	0.5-0.6	DSP		✓	✓	✓							✓
16		1.4-1.5	DSP		✓	✓	✓							✓
17	TP9	0.5-0.6	DSP		✓	✓	✓							✓
18		1.8-2.0	DSP		✓	✓								✓

SGS EHS Sydney COC
SE275923

Please Use Geotechnical Engineering Templete for Reporting

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	16/12/24
Bivek	BJ	13/12/2024	Joel K		2:50

Legend:
WG WP USG Undisturbed soil sample (glass j DSG Disturbed soil sample (glass jar) DSP Disturbed soil sample (small plastic bag) ✓ Test required * Purge & Trap # Geotechnique Screen

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

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PENRITH NSW 2750

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PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO:	**SGS ENVIRONMENTAL SERVICES** **UNIT 16** **33 MADDOX STREET** **ALEXANDRIA NSW 2015**	**Sampling By:**	BJ/AN
		Job No	20600/2
		Project:	Proposed Master Planned Community
PH:	**02 8594 0400** **FAX:** **02 8594 0499**	**Project Manager:**	IJ/BJ
ATTN:	**Ms Emily Yin**	**Location:**	393 Terrace Road, North Richmond

Sampling details

Results required by:

	Location	Depth	Soil	Water	EC (1:5)	Agressivity	ESP						Notes	Keep Sample
19	TP10	0.5-0.7	DSP		✓	✓	✓						**Aggressivity Test = pH, Cl**	✓
20		1.4-1.5	DSP		✓	✓							**SO4 and Resistivity**	✓
21	TP11	0.3-0.5	DSP		✓	✓								✓
22		1.2-1.4	DSP		✓	✓	✓							✓
23	TP12	0.4-0.5	DSP		✓	✓	✓							✓
24		0.8-1.0	DSP		✓	✓								✓
25	TP13	0.4-0.6	DSP		✓	✓	✓						ESP=	✓
26		1.3-1.5	DSP		✓	✓							Exchangeable sodium percentage	✓
27	TP14	0.2-0.4	DSP		✓	✓								✓
28		0.7-0.8	DSP		✓	✓	✓							✓
29	TP15	0.4-0.5	DSP		✓	✓	✓							✓
30		1.1-1.3	DSP		✓	✓	✓							✓
31	TP16	0.6-0.7	DSP		✓	✓	✓							✓
32		1.3-1.4	DSP		✓	✓	✓							✓
33	TP17	0.2-0.4	DSP		✓	✓	✓							✓
34	TP18	0.5-0.6	DSP		✓	✓	✓							✓
35		1.7-1.8	DSP		✓	✓								✓
36	TP19	0.5-0.6	DSP		✓	✓	✓							✓

Please Use Geotechnical Engineering Templete for Reporting

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	16/12/24
Bivek	BJ	13/12/2024	Joel K		2:50

Legend:

WG	USG	Undisturbed soil sample (glass j	DSP	Disturbed soil sample (small plastic bag)	* Purge & Trap
WP	DSG	Disturbed soil sample (glass jar)	✓	Test required	# Geotechnique Screen

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

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TO: SGS ENVIRONMENTAL SERVICES
UNIT 16
33 MADDOX STREET
ALEXANDRIA NSW 2015

PH: 02 8594 0400 **FAX:** 02 8594 0499
ATTN: Ms Emily Yin

Sampling By: BJ/AN **Job No** 20600/2
Project: Proposed Master Planned Community
Project Manager: IJ/BJ **Location:** 393 Terrace Road, North Richmond

Sampling details

Results required by:

	Location	Depth	Soil	Water	EC (1:5)	Agressivity	ESP						Notes	Keep Sample
37	TP20	0.6-0.7	DSP		✓	✓	✓						Aggressivity Test = pH, Cl	✓
38		1.9-2.1	DSP		✓	✓							SO4 and Resistivity	✓
39	TP21	0.4-0.5	DSP		✓	✓	✓							✓
40		1.4-1.5	DSP		✓	✓	✓							✓
41	TP22	0.3-0.5	DSP		✓	✓	✓							✓
42	TP23	0.5-0.6	DSP		✓	✓	✓							✓
43	TP24	0.4-0.6	DSP		✓	✓	✓						ESP=	✓
44	TP25	0.4-0.6	DSP		✓	✓	✓						Exchangeable sodium percentage	✓
45		2.0-2.3	DSP		✓	✓								✓
46	TP26	0.5-0.6	DSP		✓	✓	✓							✓
47		2.0-2.1	DSP		✓	✓								✓
48	BH1	0.5-1.0	DSP		✓	✓	✓							✓
49		1.5-2.0	DSP		✓	✓								✓
50	BH2	0.5-1.0	DSP		✓	✓	✓							✓
51		1.5-2.0	DSP		✓	✓								✓
52	BH3	0.5-1.0	DSP		✓	✓	✓							✓
53		3.0-3.5	DSP		✓	✓								✓

Please Use Geotechnical Engineering Templete for Reporting

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	
Bivek	BJ	13/12/2024	Joel K		16/12/24 2:50

Legend:
WG — USG — Undisturbed soil sample (glass j — DSP — Disturbed soil sample (small plastic bag) — * Purge & Trap
WP — DSG — Disturbed soil sample (glass jar) — ✓ — Test required — # Geotechnique Screen

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO:	**SGS ENVIRONMENTAL SERVICES** **UNIT 16** **33 MADDOX STREET** **ALEXANDRIA NSW 2015**	**Sampling By:**	BJ/AN
PH:	**02 8594 0400**	**FAX:**	**02 8594 0499**
ATTN:	**Ms Emily Yin**		

Job No	20600/2		
Project:	Proposed Master Planned Community		
Project Manager:	IJ/BJ	**Location:**	393 Terrace Road, North Richmond

Sampling details

Results required by:

	Location	Depth	Soil	Water	EC (1:5)	Agressivity	ESP						Notes	Keep Sample
54	BH4	0.5-1.0	DSP		✓	✓	✓						**Aggressivity Test = pH, Cl**	✓
55		2.5-3.0	DSP		✓	✓							**SO4 and Resistivity**	✓
56	BH5	0.4-0.6	DSP		✓	✓	✓							✓
57	BH6	0.5-0.95	DSP		✓	✓	✓							✓
58		2.5-2.6	DSP		✓	✓								✓
59	BH7	0.4-0.5	DSP		✓	✓	✓						ESP=	✓
60		1.5-1.85	DSP		✓	✓							Exchangeable sodium percentage	✓
61	BH8	0.5-1.0	DSP		✓	✓	✓							✓

Please Use Geotechnical Engineering Templete for Reporting

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	
Bivek	BJ	13/12/2024	[illegible]	[signature]	16/12/24 2:50

Legend:

WG	USG	Undisturbed soil sample (glass j	DSP	Disturbed soil sample (small plastic bag)	* Purge & Trap
WP	DSG	Disturbed soil sample (glass jar)	✓	Test required	# Geotechnique Screen

SAMPLE RECEIPT ADVICE

SE275923

CLIENT DETAILS

Contact	Indra Jworchan
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	indra.jworchan@geotech.com.au
Project	**20600/2 393 Terrace Road, North Richmond**
Order Number	**20600/2**
Samples	61

LABORATORY DETAILS

Manager	Shane McDermott
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Mon 16/12/2024
Report Due	Mon 23/12/2024
SGS Reference	**SE275923**

SUBMISSION DETAILS

This is to confirm that 61 samples were received on Monday 16/12/2024. Results are expected to be ready by COB Monday 23/12/2024. Please quote SGS reference SE275923 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	61 Soil	Type of documentation received	COC
Date documentation received	16/12/2024	Samples received in good order	Yes
Samples received without headspace	N/A	Sample temperature upon receipt	26.3°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	None	Samples clearly labelled	Yes
Complete documentation received	Yes	Number of eskies/boxes received	

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

SAMPLE RECEIPT ADVICE

SE275923

CLIENT DETAILS

Client Geotechnique

Project 20600/2 393 Terrace Road, North Richmond

SUMMARY OF ANALYSIS

No.	Sample ID	Conductivity (1:2) in soil	Conductivity and TDS by Calculation - Soil	Exchangeable Cations and Cation Exchange Capacity	Moisture Content	pH in soil (1:2)	Soluble Anions in Soil from 1:2 DI Extract by Ion
001	TP1 0.4-0.5	2	1	13	1	1	2
002	TP1 1.5-1.7	2	1	13	1	1	2
003	TP2 0.4-0.6	2	1	13	1	1	2
004	TP2 1.8-2.0	2	1	-	1	1	2
005	TP3 0.4-0.6	2	1	13	1	1	2
006	TP3 1.8-2.0	2	1	-	1	1	2
007	TP4 0.5-0.7	2	1	13	1	1	2
008	TP4 1.7-1.9	2	1	13	1	1	2
009	TP5 0.3-0.5	2	1	-	1	1	2
010	TP5 0.9-1.0	2	1	13	1	1	2
011	TP6 0.5-0.7	2	1	13	1	1	2
012	TP6 2.0-2.2	2	1	-	1	1	2
013	TP7 0.5-0.7	2	1	13	1	1	2
014	TP7 1.8-2.0	2	1	-	1	1	2
015	TP8 0.5-0.6	2	1	13	1	1	2
016	TP8 1.4-1.5	2	1	13	1	1	2
017	TP9 0.5-0.6	2	1	13	1	1	2
018	TP9 1.8-2.0	2	1	-	1	1	2
019	TP10 0.5-0.7	2	1	13	1	1	2
020	TP10 1.4-1.5	2	1	-	1	1	2
021	TP11 0.3-0.5	2	1	-	1	1	2
022	TP11 1.2-1.4	2	1	13	1	1	2
023	TP12 0.4-0.5	2	1	13	1	1	2
024	TP12 0.8-1.0	2	1	-	1	1	2

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE275923

CLIENT DETAILS

Client Geotechnique

Project 20600/2 393 Terrace Road, North Richmond

SUMMARY OF ANALYSIS

No.	Sample ID	Conductivity (1:2) in soil	Conductivity and TDS by Calculation - Soil	Exchangeable Cations and Cation Exchange Capacity	Moisture Content	pH in soil (1:2)	Soluble Anions in Soil from 1:2 DI Extract by Ion
025	TP13 0.4-0.6	2	1	13	1	1	2
026	TP13 1.3-1.5	2	1	-	1	1	2
027	TP14 0.2-0.4	2	1	-	1	1	2
028	TP14 0.7-0.8	2	1	13	1	1	2
029	TP15 0.4-0.5	2	1	13	1	1	2
030	TP15 1.1-1.3	2	1	13	1	1	2
031	TP16 0.6-0.7	2	1	13	1	1	2
032	TP16 1.3-1.4	2	1	13	1	1	2
033	TP17 0.2-0.4	2	1	13	1	1	2
034	TP18 0.5-0.6	2	1	13	1	1	2
035	TP18 1.7-1.8	2	1	-	1	1	2
036	TP19 0.5-0.6	2	1	13	1	1	2
037	TP20 0.6-0.7	2	1	13	1	1	2
038	TP20 1.9-2.1	2	1	-	1	1	2
039	TP21 0.4-0.5	2	1	13	1	1	2
040	TP21 1.4-1.5	2	1	13	1	1	2
041	TP22 0.3-0.5	2	1	13	1	1	2
042	TP23 0.5-0.6	2	1	13	1	1	2
043	TP24 0.4-0.6	2	1	13	1	1	2
044	TP25 0.4-0.6	2	1	13	1	1	2
045	TP25 2.0-2.3	2	1	-	1	1	2
046	TP26 0.5-0.6	2	1	13	1	1	2
047	TP26 2.0-2.1	2	1	-	1	1	2
048	BH1 0.5-1.0	2	1	13	1	1	2

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
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Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE275923

CLIENT DETAILS

Client Geotechnique

Project 20600/2 393 Terrace Road, North Richmond

SUMMARY OF ANALYSIS

No.	Sample ID	Conductivity (1:2) in soil	Conductivity and TDS by Calculation - Soil	Exchangeable Cations and Cation Exchange Capacity	Moisture Content	pH in soil (1:2)	Soluble Anions in Soil from 1:2 DI Extract by Ion
049	BH1 1.5-2.0	2	1	-	1	1	2
050	BH2 0.5-1.0	2	1	13	1	1	2
051	BH2 1.5-2.0	2	1	-	1	1	2
052	BH3 0.5-1.0	2	1	13	1	1	2
053	BH3 3.0-3.5	2	1	-	1	1	2
054	BH4 0.5-1.0	2	1	13	1	1	2
055	BH4 2.5-3.0	2	1	-	1	1	2
056	BH5 0.4-0.6	2	1	13	1	1	2
057	BH6 0.5-0.95	2	1	13	1	1	2
058	BH6 2.5-2.6	2	1	-	1	1	2
059	BH7 0.4-0.5	2	1	13	1	1	2
060	BH7 1.5-1.85	2	1	-	1	1	2
061	BH8 0.5-1.0	2	1	13	1	1	2

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .